



P460/P360 Memory Scanners



Product Reference Guide

***P460/P360 Memory Scanners
Product Reference Guide***

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June 2001



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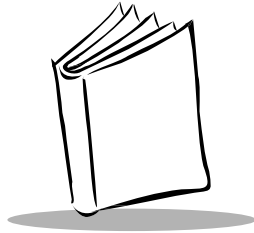
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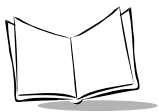
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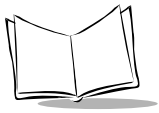
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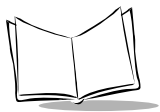
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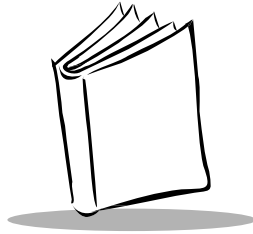
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About This Manual

Introduction

The P460/P360 Memory Scanner Product Reference Guide provides general instructions for setup, operation, troubleshooting, maintenance, and programming the Phaser Batch scanners.

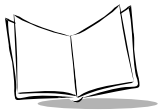
Chapter Descriptions

- ◆ [Chapter 1, *The Phaser Series Scanner*](#), describes the Phaser, the battery, and the cradle.
- ◆ [Chapter 2, *Set Up*](#), explains how to set up the Phaser scanner.
- ◆ [Chapter 3, *Operation*](#), explains how to operate the Phaser scanner.
- ◆ [Chapter 4, *Maintenance And Specifications*](#), talks about the maintenance and the specifications of the Phaser scanner and the cradle.
- ◆ [Chapter 5, *Parameter Menus*](#), has all the optional parameter bar codes for personalizing your Phaser.
- ◆ [Appendix A, *Bar Code Information*](#), has information about bar codes.
- ◆ [Appendix B, *Messages and Error Codes*](#), describes the messages and error codes displayed by the scanner.

Notational Conventions

The following conventions are used in this document:

- ◆ Bullets (•) indicate:
 - ◆ action items



- ♦ lists of alternatives
- ♦ lists of required steps that are not necessarily sequential
- ♦ Sequential lists (e.g., those that describe step-by-step procedures) appear as numbered lists.

Related Publications

- ♦ *P460/P360 Memory Scanners Quick Reference Guide*, p/n 70-33628-xx
- ♦ *PL 460 Cradle Quick Reference Guide*, p/n 70-33657-xx
- ♦ *MCL Designer for Phaser Series User's Guide*, p/n 70-37689-xx

Service Information

If you have a problem with your equipment, contact the Symbol Support Center. Before calling, have the model number, serial number, and several of your bar code symbols at hand.

Call the Support Center from a phone near the scanning equipment so that the service person can try to talk you through your problem. If the equipment is found to be working properly and the problem is symbol readability, the Support Center will request samples of your bar codes for analysis at our plant.

If your problem cannot be solved over the phone, you may need to return your equipment for servicing. If that is necessary, you will be given specific directions.

Note: *Symbol Technologies is not responsible for any damages incurred during shipment if the approved shipping container is not used. Shipping the units improperly can possibly void the warranty. If the original shipping container was not kept, contact Symbol to have another sent to you.*

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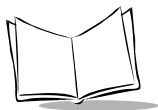
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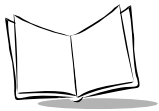
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Wear items and accessories having a Symbol serial number, will carry a 90-day limited warranty. Non-serialized items will carry a 30-day limited warranty.



Warranty Coverage and Procedure

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Symbol will use new or refurbished parts at its discretion and will own all parts removed from repaired products. Customer will pay for the replacement product in case it does not return the replaced product to Symbol within 3 days of receipt of the replacement product. The process for return and customer's charges will be in accordance with Symbol's Exchange Policy in effect at the time of the exchange.

Customer accepts full responsibility for its software and data including the appropriate backup thereof.

Repair or replacement of a product during warranty will not extend the original warranty term.

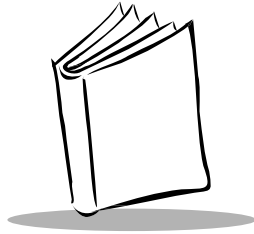
Symbol's Customer Service organization offers an array of service plans, such as on-site, depot, or phone support, that can be implemented to meet customer's special operational requirements and are available at a substantial discount during warranty period.

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Some states (or jurisdictions) do not allow the exclusion or limitation of incidental or consequential damages, so the proceeding exclusion or limitation may not apply to you.



Chapter 1

The Phaser Series Scanner

Introduction

The P460/P360 Memory Scanners bring new flexibility and economy to data capture and data management in both retail and industrial operations. In addition to an integrated bar code scanner, the Phaser has an on-board keyboard and display. They can operate in both corded and battery-powered cordless modes. There are many versions available:

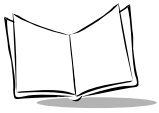
- ♦ 1D P 460: the batch retail version
- ♦ 1D P 360: the batch industrial version
- ♦ 2D P 460: the batch retail version
- ♦ 2D P 360: the batch industrial version

Unless otherwise noted, the term Phaser refers to all versions of the scanner.

Rechargeable Battery

In the handle of the scanner, there is a rechargeable lithium-ion battery. This provides all power to the scanner during cordless operation. It provides 12 hours of use in a typical application.

When fully depleted, the battery can be recharged to full charge in about 3-1/2 hours.



The Cradle

The PL 460 and PL 360 Cradles act as a:

- ◆ stand
- ◆ communication interface with the host
- ◆ battery charger for the Phaser Batch Scanner.

Note: *The cradle is not required for certain applications.
The scanner battery also charges when a power supply cable is attached.*

The cradle can sit on a desktop or be wall-mounted, whichever is more convenient. It receives data from the scanner via connectors in the bottom of the scanner and the top of the cradle. It then transmits that data to the host device through an attached cable. It also acts as a holder for the scanner.

The cradle also provides power for charging the scanner's battery (in the scanner). The cradle has a charge status indicator light that shows the status of the battery charging (Refer to Table 4-1 on page 4-3).

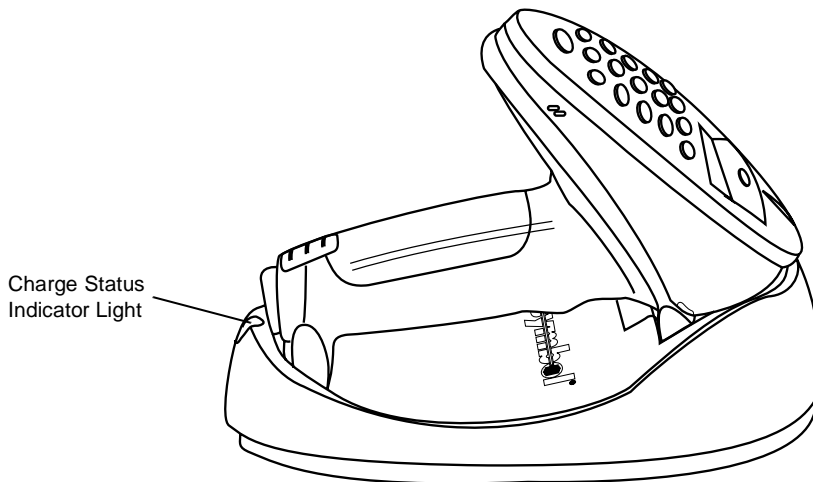
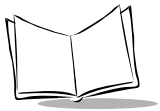


Figure 1-1. Scanner and Cradle

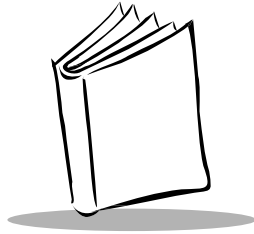
There are two versions of the Cradle:

- ♦ PL 460 Cradle: batch retail version
- ♦ PL 360 Cradle: batch industrial version.

Unless otherwise noted, the term Cradle refers to both versions of the cradle.



P460/P360 Memory Scanners Product Reference Guide



Chapter 2

Set Up

Introduction

This chapter covers the procedures for setting up the Phaser and its accessories.

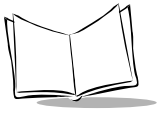
Unpacking

Remove the scanner from its packing and inspect it for damage. If the scanner was damaged in transit, call one of the telephone numbers listed in the section [Symbol Support Center](#) on page xi. KEEP THE PACKING. It is the approved shipping container and should be used if you ever need to return your equipment for servicing.

Cables

Installing the Cable on the Scanner

1. Power down all devices that will be connected to the scanner.



2. Plug the modular connector on the cable into the receptacle in the bottom of the Phaser handle.

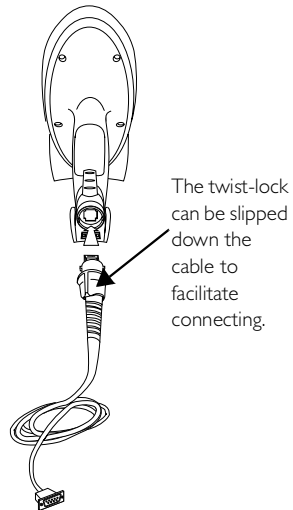


Figure 2-1. Connecting the Cable to the Phaser

3. Turn the cable twist-lock 1/8 turn clockwise to seat it.

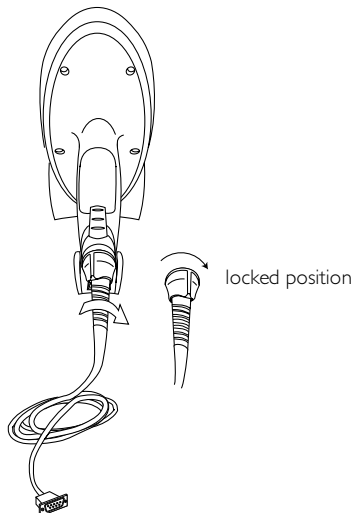


Figure 2-2. Locking the Cable to the Phaser

4. Gently pull the cable to make certain it is properly seated.

Disconnecting Cables

To disconnect the scanner cable:

1. Power down all the devices connected to the scanner.
2. Remove the cable by twisting the twist-lock 1/8 turn counter-clockwise and pulling the cable out.

Setting Up the Cradle

On the bottom of the cradle are three ports. COM1 connects to the host computer, COM2 is used for daisy-chaining multiple base stations together, and the Power port supplies power to the cradle.

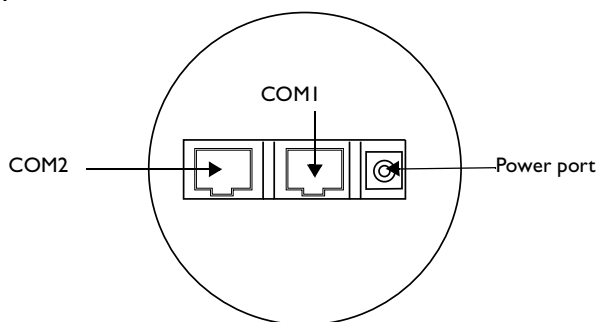


Figure 2-1. Ports on the Cradle

1. Connect an appropriate power supply to the Power port on the cradle. The indicator light on the cradle blinks, signifying successful power-up.

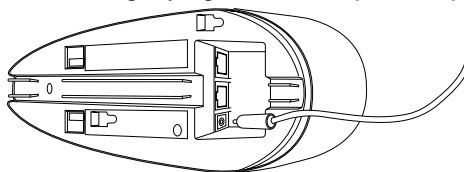
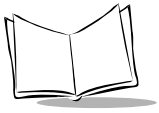


Figure 2-2. Power Supply Port

2. Insert the cable from the host computer into COM1 and the cable to the other base stations, if any, into COM2. Refer to [Connecting to a Host](#) on page 25.



Scanner Power Options

Two power options are available:

- ♦ Battery
- ♦ Power Supply (“Charging”) Cable

Charging the Battery

Before its first use, the Phaser battery must be charged.

Using the Cradle

1. Connect the power supply to the power input jack on the cradle.
2. Connect the power supply to a receptacle supplying AC power of the proper voltage level.
3. Insert the scanner into the cradle so that the nose of the scanner and tip of the handle seat into the receptacles. The scanner displays “UNIT CRADLED” when properly inserted in the cradle.

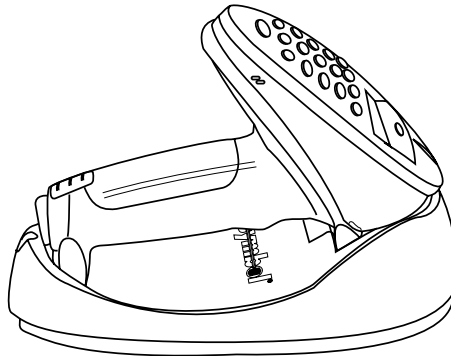


Figure 2-3. Placing the Scanner into the Cradle

4. Check the charge status indicator light. For additional information on charging, see [Table 4-1 on page 4-3](#).
5. The battery charges automatically. A full charge of a depleted battery takes approximately 3-1/2 hours.

The cradle recharges batteries in the scanner only when the scanner is in the cradle. A scanner with a depleted battery starts charging immediately upon insertion into the cradle,

whereas a scanner with a partially charged battery begins charging after approximately 15 minutes. Note that the scanner can be removed from the cradle at any time.

Using the Cable

1. Connect the cable to the scanner.
2. Connect the power supply to the power jack on the cable.
3. Connect the power supply to a receptacle supplying AC power of the proper voltage level.
4. The battery charges automatically. A full charge of a depleted battery takes approximately 3-1/2 hours.

Battery Charge

When the battery's charge is almost depleted, the scanner emits 4 high tone beeps, when the trigger is pulled, indicating that it must be recharged.

Connecting to a Host

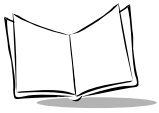
With some host types, the Phaser is unable to answer host terminal polls if the appropriate host type is not selected. This may result in an error message generated by the host. To correct this situation, select the proper parameter set and initialize the host terminal. See [Chapter 5, *Parameter Menus*](#) for more information.

There are two basic host communications options available.

- ♦ When using as a batch device running on a battery, you can transmit stored data to a host either through an RS-232 or a Synapse cable connected directly to the scanner, or through the cradle, as described in [Setting Up the Cradle](#) on page 23.
- ♦ When using as a corded device, power and host communications takes place via RS-232 or Synapse cables.

RS-232 Power Supply Operation

1. Make sure all host devices are powered down.
2. Plug the connector at the end of the scanner's or cradle's cable into an appropriate RS-232 receiving port on the host device.



3. For the scanner cable, plug the power supply cable into the power supply port on the housing of the host connector. For the cradle cable, plug the power supply cable into the Power port on the bottom of the cradle.
4. Connect the power supply into an AC receptacle.

Using A Synapse Cable with the Cradle

1. Connect the Synapse Adapter cable to COM1 in the cradle.
2. Connect the Adapter cable to the Synapse Interface cable.
3. The Synapse Adapter cable has a flying power lead. Connect this lead to the receptacle in the Synapse Interface cable, as shown below. See the Synapse guide for details.

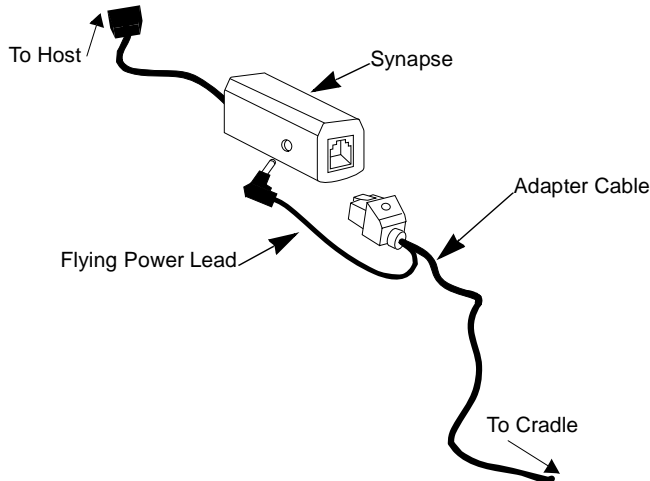


Figure 2-4. Synapse and Adapter Cable

4. Connect the Synapse Interface cable to the host.
5. Connect an appropriate power supply to the power receptacle on the cradle. The indicator light on the cradle blinks, signifying successful power-up.

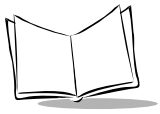
Using a Synapse Cable with the Scanner

1. Connect the Synapse Adapter cable into the bottom of the scanner.
2. Connect the Synapse Adapter cable to the Synapse Interface cable .
3. Connect the Synapse Adapter cable's flying power lead to the receptacle in the Synapse Interface cable (refer to [Figure 2-4](#)).

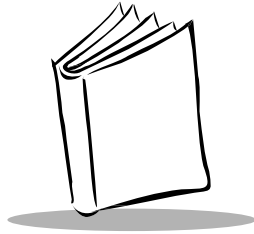
4. Plug the Synapse Interface cable into the host device.
5. Connect an appropriate power supply to the power receptacle in the Synapse Interface cable.

Wand Emulation, OCIA, OCR, Keyboard Wedges

See the instructions packed with the appropriate Synapse cable. An adapter cable is required. See [Figure 2-4 on page 2-6](#).



P460/P360 Memory Scanners Product Reference Guide



Chapter 3 *Operation*

Introduction

This chapter covers how to use the Phaser scanner.

Default Applications

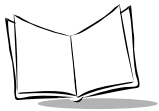
The Phaser is shipped from the factory with two ready to use default applications:

- Scan and Transmit
- Batch / Inventory

These applications allow users to scan and view data, enter quantities, manually enter data, and much more.

When the unit is initially powered up (e.g., when a new battery is inserted), it displays the system start-up banner. Alternatively, the scanner can be reset manually by pressing the <FUNC> key, then the <*> key. When the scanner is powered up or reset, the system banner appears as follows:

Symbol Technologies
Phaser Memory Scnr



Initial Powerup

After a few seconds, the System Banner is replaced by the system initialization screen.

Symbol Technologies
Initializing...

After initialization, the scanner enters either the Scan & Transmit mode, or the Batch/Inventory mode, depending on whether a communications cable is present or not. The default communication protocols are:

- *RS232/Synapse* for Scan & Transmit
- *MCL NET* for Batch/Inventory

If a Synapse cable is attached, the scanner automatically overrides the default settings.

Batch / Inventory Application

The batch/inventory application is a scan-and-store program and allows you to:

- Display and store (Batch) data for transmission later
- Eliminate repetitive scanning with a quantity entry feature
- Manually enter alphanumeric data if no bar code is present
- Review and delete stored records
- Transmit stored (batch) data to a host.

The scanner automatically switches to batch/inventory mode operation when the scanner is removed from its cradle or its cable is disconnected.

The following screen appears:

SCAN: _____

Scanned bar code data is automatically displayed and stored for review and transmission to a host at a later date.

If the scanner powers down, pull the trigger or press the <ENTER> key to wake it up.

Numeric Data Entry

This inventory application also allows you to manually enter data if no bar code is present.

After keying in data, press the <ENTER> key. During data entry, the <BK> key corrects keying errors digit by digit, and the <FUNC> + <BK> combination clears the screen so you can start over. If your entry exceeds 34 characters, the characters will scroll off the visible portion of the screen, but are retained for storage.

Alpha Data Entry

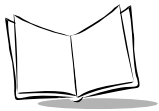
To enter alpha characters, press the <Mode> key once to put the scanner in Alpha Mode.

Numeric buttons 1 through 9 are associated with the alpha characters. For example, the letters a, b and c are located on numeric button 7. Press the button with the letter you desire - once for the letter a, twice for the letter b, or three times for the letter c. You can continue entering alpha characters or switch to numerics. Press <ENTER> to save or send the data.

To return to numeric entry mode after entering alpha characters, press the <Mode> key again. For example, to manually enter **17ABF5**, do the following steps:

Data	Action
1	Press numeric button 1.
7	Press numeric button 7.
A	Press <MODE> button once, then numeric button 7 once. Wait for one second (you will hear a low pitched beep).
B	Press numeric button 7 twice.
F	Press numeric button 8 three times.
5	Press <MODE> button once, then numeric button 5 once, then <ENTER>.

For more information, refer to *Keypad Operation* on page 3-21.



Eliminating Repetitive Scanning

To eliminate repetitive scanning of identical items, you can enter a quantity prior to scanning a bar code. This quantity entry feature can also be used when manually entering bar code data.

To enter a quantity, press the * key. The following screen appears:

Quantity: _____

Then, key in a quantity followed by the <ENTER> key. Next, the bar code data entry screen reappears. Scan the item's bar code. The scanner sends the bar code data to the host the keyed-in amount of times. For instance, if you type in a quantity of 6 then scan a bar code, the scanner sends that bar code data to the host six times as if the bar code had been scanned six times.

Reviewing and Deleting Stored Records

While running the inventory application, you can review and delete stored data. Press the <FUNC> key, then the <2> key to enter this mode. The following screen appears:

CODE: xxxx

aaaa/bbbb

Three fields are shown on this screen:

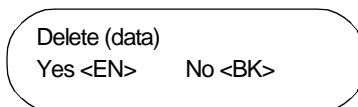
- xxxx = the data contained within the record (the first 25 characters)
- aaaa = the record number of the file being viewed.
- bbbb = the number of total records stored.

Use the up Δ and down ∇ arrow keys to scroll through the stored data.

Press <ENTER> or the <FUNC> key, then the <BK> key at any time to exit the review mode.

To delete stored records:

1. Press the <BK> key to select a record to delete. The confirmation screen displays:



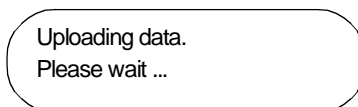
2. Press Enter to delete the record or <BK> key to cancel the process.

Transmitting Data to the Host

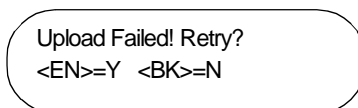
When you are ready to transmit your stored (Batch) data to the host, press the <FUNC> key, then the <1> key on the key pad, then place the scanner in the cradle or connect the communication cable.

Note: *When attached to a cable, the scanner will automatically begin running the Scan & Transmit application. The stored (Batch) data will not be transmitted to the host until the <FUNC> key, then <1> key is entered.*

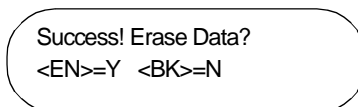
The scanner indicates the transfer is in progress with the following screen:

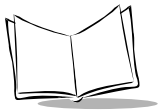


You have 30 seconds from the time that this screen appears to either insert the scanner into a cradle or attach a communications cable. If you fail to do so, the following screen appears:



If the upload is successful, the following screen appears:





Pressing the <BK> key causes the bar code data to be retained in memory. If this is done, any subsequent bar codes are appended to the end of the file.

If you press <ENTER>, a confirmation screen appears:

Confirm file erase
<EN>=Y <BK>=N

To confirm the file erase press <ENTER>, or press <BK> to retain the stored data.

Daisy-Chaining Cradles

Multiple cradles can be connected in series (daisy-chained) to communicate through a single serial port. This out-of-the-box capability is a standard feature of the Phaser memory scanner's operating system. To enable it, simply daisy-chain the base stations together through Com 2. See *Setting Up the Cradle* on page 2-3 for more details. Each cradle still requires its own power supply.

To establish which scanner the data originated from, and to prevent a buffer over-write, the scanner ID of daisy-chained scanners must be changed from the factory default of 001 to a unique number.

If a scanner is placed in a daisy-chained cradle while another scanner is transferring data to the host, the second scanner will begin its data transfer after the first scanner's transfer is completed.

Scan and Transmit Application

The scan and transmit application allows you to:

- Display and simultaneously transmit data to a host
- Eliminate repetitive scanning with a quantity entry feature
- Manually enter alphanumeric data if no bar code is present.

The scanner automatically switches to scan and transmit operation when a cable is attached.

The scan and transmit screen appears as follows:

SKU:

In this mode, scanned bar codes are automatically transmitted to the host in real time.

Alphanumeric data may be manually entered in the same manner as described in the *Batch / Inventory Application* on page 3-2. Keyed data transmits once you press the <ENTER> key.

To eliminate repetitive scanning, you can enter a quantity prior to scanning a bar code. Refer to *Eliminating Repetitive Scanning* on page 3-4.

System Menu

The system menu allows the user to set up the operation of the scanner, such as loading a new application, erasing files, setting the scanner ID, etc.

Enter System Menu by scanning the bar code below or by entering a keypad sequence.

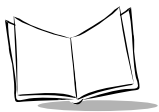


Enter System Menu Bar Code

To access the System Menu using the keypad sequence, press the <FUNC>, then the <*> key, followed by the <FUNC> key, then the <BK> key.

When you enter the system menu, the following screen appears:

Phaser Setup
0. System Setup



Below is the list of available options. Press the Up Δ and Down ∇ row keys to scroll through them. Press <ENTER> to select a menu option. You can also select a menu option by typing the associated menu option number and then pressing <ENTER>.

- 0. System Setup
 - 1. App. Control
 - 2. Parameter Control
 - 3. System Status
 - 4. Erase File
 - 5. Version
 - 9. Return to App

The system menu options are described below.

System Setup

System Setup allows you to configure the scanner's basic settings such as date and time.

Option	Description
0. Set Com Protocol 0. Scan & Transmit -MCL NET -RS232/Synapse -Back to Com Protocol 1. Batch/Inventory -MCL NET -RS232/Synapse -Back to Com Protocol 9. Back to Main	Sets the communication protocol used by the default applications. The options are MCL-Net or RS232/Synapse. If RS232/Synapse is selected, the scanner automatically identifies whether an RS-232 or Synapse interface is required. The communication protocol can be set independently for Scan & Transmit and Batch/Inventory. For example, you can set the Scan & Transmit application to RS232 and the Batch/Inventory to MCL NET.
1. Set Date	Sets the date of the internal clock of the scanner. The scanner displays its current date and provides a prompt for the user to enter the new date. The date format is mm/dd/yyyy.
2. Set Time	Sets the time of the internal clock of the scanner. The scanner displays its current time value, and provides a prompt for the user to enter the new time. The time format is HH:MM:SS entered in military time. For example, to enter 11:25PM, enter 23:25:00.

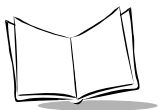
Option	Description
3. Set Contrast	Sets the display contrast. The scanner displays the current contrast setting. Use the up and down arrow keys to change the contrast. The default contrast is 4, and the range is from 0 to 7, with 0 being the lightest and 7 being the darkest. To cancel the change, press the <FUNC><BK> keys, and to accept the change, press the <ENTER> key.
4. Set Scanner ID	Sets the scanner ID. The scanner displays its current ID, and the user may key in a new value between 1 and 254. The default is 001.
9. Back to Main	Returns the user to the system menu.

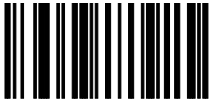
Note: *The scanner contains a backup power source to retain the time and date information for up to 24 hours after loss of battery power. If battery power is not restored within 24 hours, time and date information will be lost.*

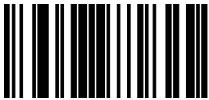
App. Control

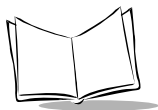
App. Control allows you to control your application, specifically, load new system application files on your scanner, reset your default applications, etc.

You can load a new application/file or system code by either scanning the appropriate bar code or entering the appropriate keypad value as indicated on the display.



Option	Description
0. Load App / File	<p>Puts the scanner into a mode to receive application downloads, file updates, and MCL-Link commands from the host.</p> <p>To enter this mode using the key pad, select this option on the system menu. The following screen displays:</p> <div>Com Protocol=MCL NET <EN>=Y <BK>=N</div> <p>OR</p> <p>To enter this mode from an application without entering the system menu or entering key strokes, scan the bar code below.</p> <div> Load New Application/File</div> <div>Loading Status: Waiting for input</div> <p>After downloading is complete, the system menu is exited and the application initiated.</p>
1. Set Default App	<p>Restores the default application described above. The default application overwrites any downloaded application. (This option may be used to restore functionality to a scanner which has been loaded with a defective application.) Prior to resetting the default application, the user is prompted to confirm this operation:</p> <div>Reset Default App? <EN>=Y <BK>=N</div> <p>Press the <ENTER> key to confirm the choice (Yes) or the <BK> key to cancel the choice (No).</p>

Option	Description
2. System Code	<p>Updates the scanner operating system (Firmware). An RS232 cable is required to download a new operating system. To enter this mode using the key pad, select this option on the system menu.</p> <div data-bbox="680 375 1038 480" style="border: 1px solid black; border-radius: 15px; padding: 10px; margin: 10px auto; width: fit-content;"> Load New System Code <EN>=Y <BK>=N </div> <p>Press the <ENTER> key to confirm the choice (Yes) or the <BK> key to cancel the choice (No).</p> <div data-bbox="680 618 1038 724" style="border: 1px solid black; border-radius: 15px; padding: 10px; margin: 10px auto; width: fit-content;"> Attach RS232 Cable: Press EN to Start </div> <p>Attach the RS232 cable and press <ENTER> to start the download.</p> <p>OR</p> <p>To enter this mode from an application without entering the system menu or entering key strokes, scan the bar code below.</p> <div data-bbox="744 964 950 1062" style="text-align: center;">  </div> <p style="text-align: center;">System Code</p> <div data-bbox="680 1162 1038 1268" style="border: 1px solid black; border-radius: 15px; padding: 10px; margin: 10px auto; width: fit-content;"> Loading System Code </div> <p>After the download is complete, the system menu is exited and the application initiates.</p>
9. Back to Main	Returns the user to the system menu.



Parameter Control

Parameter Control allows you to control the scanner parameters such as Scan Parameters and Set Default Params.

Option	Description
0. Scan Parameters	<p>This option allows you to program your scanner by scanning the bar codes in Chapter 5, Parameter Menus. Parameters set in your MCL application can not be changed with this option.</p> <p>When you see the following screen, you are able to scan the parameter bar codes:</p> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; text-align: center; margin: 10px auto; width: fit-content;"><p>Scan Parameters <FUNC> <BK> to quit</p></div> <p>After scanning the desired bar codes, press <FUNC> <BK> to exit this mode.</p>
1. Set Default Param	<p>Restores the default parameters in the scanner. The default parameters overwrite any scanned parameters. Prior to resetting the default parameters, you are prompted to confirm your choice.</p>
9. Back to Main	<p>Returns the user to the system menu.</p>

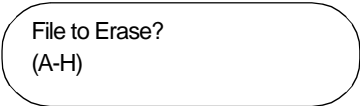
System Status

System Status allows you to perform system checks such as Battery Check.

Option	Description
0. Battery Check	<p>Checks the battery charge level.</p> <p>Good indicates the battery does not require recharging.</p> <p>Low/Recharge indicates the scanner requires a recharge.</p>
9. Back to Main	<p>Returns the user to the system menu.</p>

Erase File

Erase File allows you to erase your scanner batch data. All batch data files must be transferred from the scanner to the host before erasing. A screen prompts you to indicate which file is being erased. The batch/Inventory application data is always saved in file A.

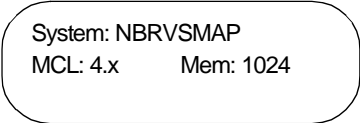


File to Erase?
(A-H)

Enter the file name, (the name is a single letter A-H), and press <ENTER> to erase the file.

Version

This option displays the version of firmware (operating system) run by the scanner, and the size of the scanner memory, such as 1024K. For example, the firmware version shown on the display below is NBRVSMAP.



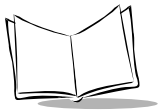
System: NBRVSMAP
MCL: 4.x Mem: 1024

Return to App

Return to App exits the system setup mode and returns to the application (either the default application described above, or any downloaded application).

ADF Plus

ADF Plus is an intuitive Windows based utility that allows you to customize your scanner setup and generate Advanced Data Formatting (ADF) rules. An Advanced Data Formatting rule gives you the ability to modify the bar code data before sending it to the host. This enhances capability between bar code data and your host software, allowing you to program the scanner rather than modifying your host application. The scanner is programmed by a PC download or by scanning ADF Plus programming bar codes. Scanner programming is saved in a setup file distributed electronically (Web site, floppy disk, E-mail, or fax).



Note: Advanced data formatting rules created with ADF Plus are for use with the default applications only and will not work with applications created with MCL-Designer.

Scanning

The scanner ships with the default application and default parameters that is ready-to-use right out of the box. If this is not what you need for your application, refer to the *MCL Designer Manual* for programming instructions and [Chapter 5, Parameter Menus](#) for scanning and communications parameters. If you need assistance, contact your local supplier or Symbol Support Center.

1. If you are using the scanner in corded mode, make sure all cable connections are secure. Otherwise, make sure the battery is sufficiently charged.
2. Make sure the bar code is in the correct scanning range. Aim and press the trigger. The scanner has read the symbol when:
 - You hear a beep.
 - The LED above the screen turns green.
 - The red laser turns off.

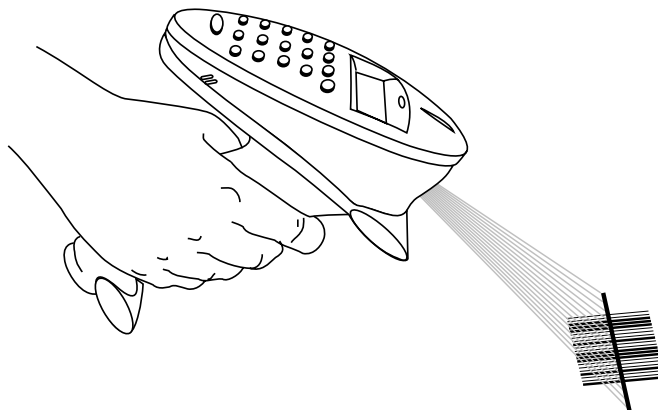


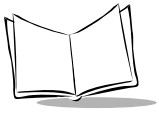
Figure 3-1. Scanning a Bar Code

Scan the Entire Symbol

- Your scan beam must cross every bar and space on the symbol.

- The larger the symbol, the farther away you should hold the scanner.
- Hold the scanner closer for symbols with bars that are close together.
- A short, high tone beep indicates a good decode.





Hold at an Angle

Do not hold the scanner directly over the bar code. Laser light reflecting *directly* back into the scanner from the bar code is known as specular reflection. This strong light can “blind” the scanner and make decoding difficult. The area where specular reflection occurs is known as a “dead zone.”

You can tilt the scanner up to 65° forward or back and still achieve a successful decode. Simple practice quickly shows what tolerances to work within.

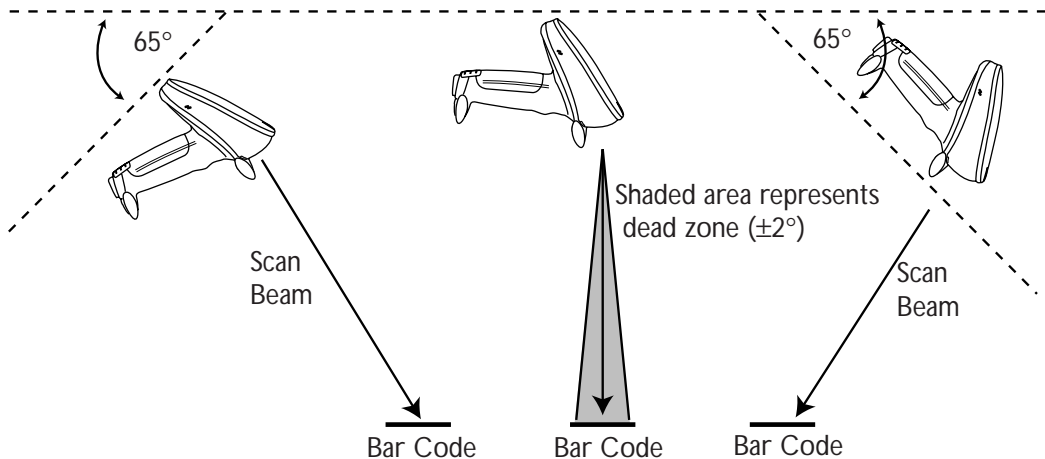


Figure 3-2. Maximum Tilt Angles and Dead Zone

Test Symbols

To ensure your scanner is working properly, try scanning the following bar codes. If you have trouble, refer to *Troubleshooting* on page 3-23.



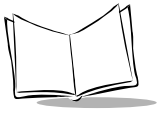


UPC



Symbol Technologies, Inc.

PDF417



P460/P360 1D Scanner Decode Zone

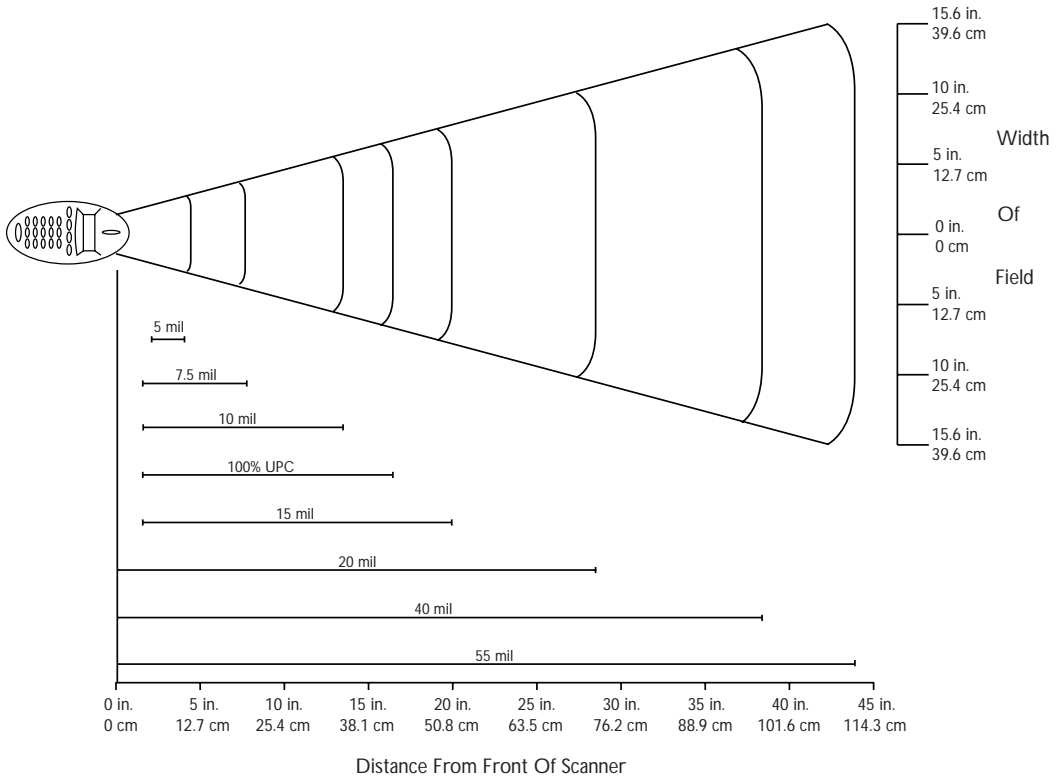


Figure 3-3. P460/P360 1D Scanner Decode Zone

P460/P360 2D Scanner Decode Zone

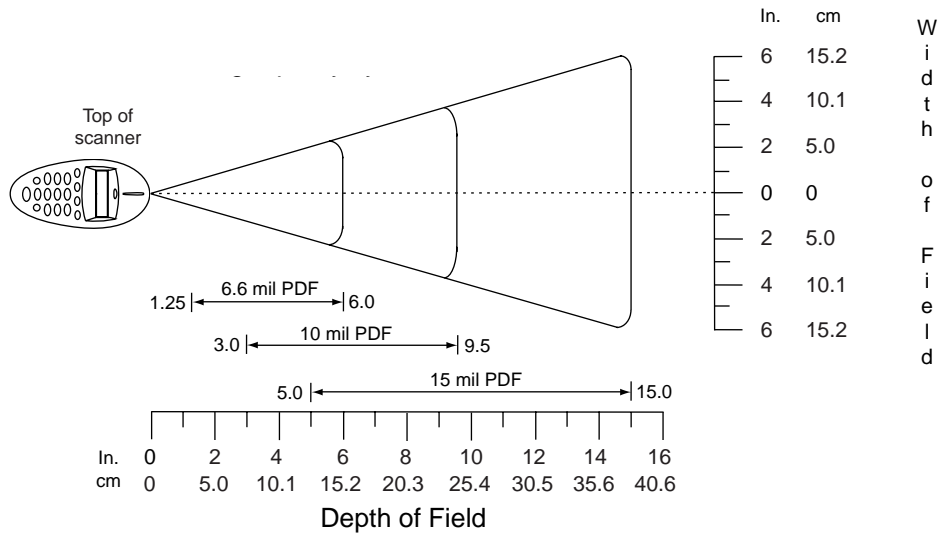


Figure 3-4. P460/P360 2D Scanner - 2D Bar Code Decode Zone

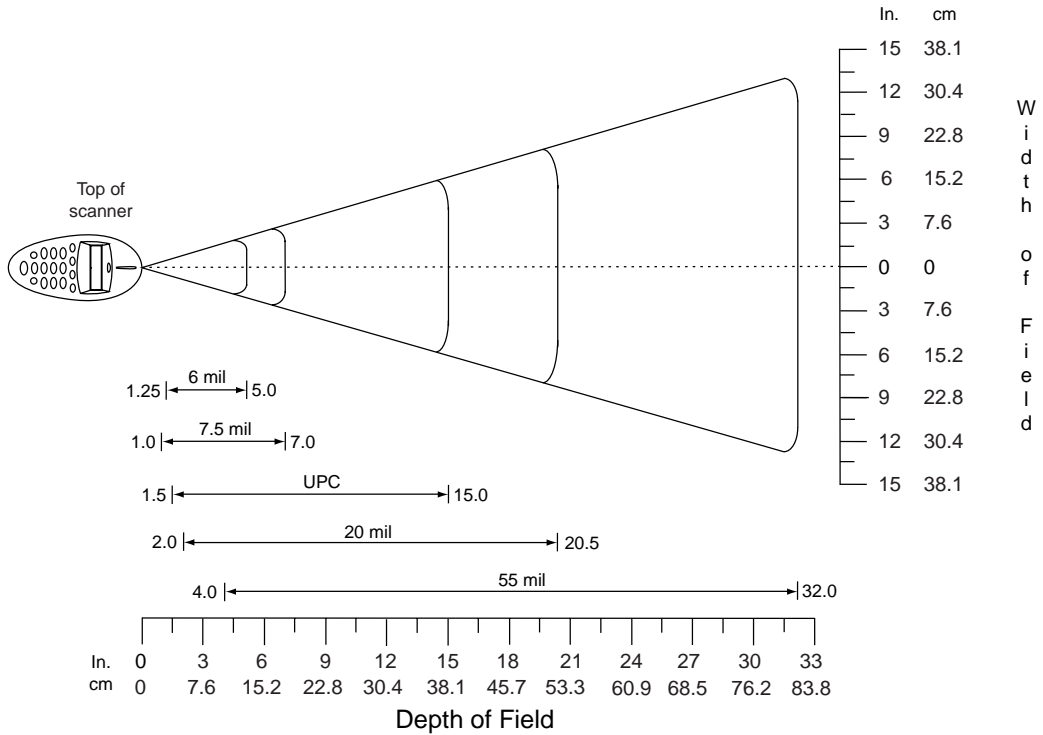
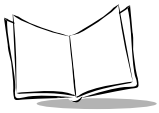


Figure 3-5. P460/P360 2D Scanner - 1D Bar Code Decode Zone

Keypad Operation

Instead of scanning a bar code, you can enter the bar code data using the keypad on the top of the scanner. To enter numeric data, type the numeric value desired and press <ENTER>. A beep lets you know that the entry was accepted. See [Figure 3-6 on page 3-22](#).

To enter alpha characters, press the <Mode> key once to put the scanner in Alpha Mode.

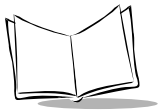
Numeric buttons 1 through 9 are associated with the alpha characters. For example, the letters a, b and c are located on numeric button 7. Press the button with the letter you desire - once for the letter a, twice for the letter b, or three times for the letter c. You can continue entering alpha characters or switch to numerics. Press <ENTER> to save or send the data.

To return to numeric entry mode after entering alpha characters, press the <Mode> key again. For example, to manually enter **17ABF5**, do the following steps:

Data	Action
1	Press numeric button 1.
7	Press numeric button 7.
A	Press <MODE> button once, then numeric button 7 once. Wait for one second (you will hear a low pitched beep).
B	Press numeric button 7 twice.
F	Press numeric button 8 three times.
5	Press <MODE> button once, then numeric button 5 once, then <ENTER>.

Every time you press the button with the letter you desire, you hear a low-pitched beep to let you know that the entry was registered. Although the entry is registered, it has not been transferred to the host yet. A high-pitched beep lets you know that the entry has been transferred to the host.

To return to numeric mode, press the Mode key again. Pressing the Enter key saves the data.



To put a decimal point (.) into numeric data, type in the numbers before the decimal point, then press the mode key, press the decimal, and press the mode key again. Now resume typing in the values to the right of the decimal.

To enter a dash (-), press the mode key once, then the zero (0) key twice.

To enter a blank space (), press the mode key once, then the zero (0) key three times.

The Function key in combination with a numeric key can be programmed to launch an operation, such as allowing you to review batch records. To use the Function key to review batch records, press the <FUNC> key, release it, and then press the <2> key. For more information on how to program these keys for additional tasks and operations, refer to the *MCL Designer User's Guide* p/n 70-37689-XX.

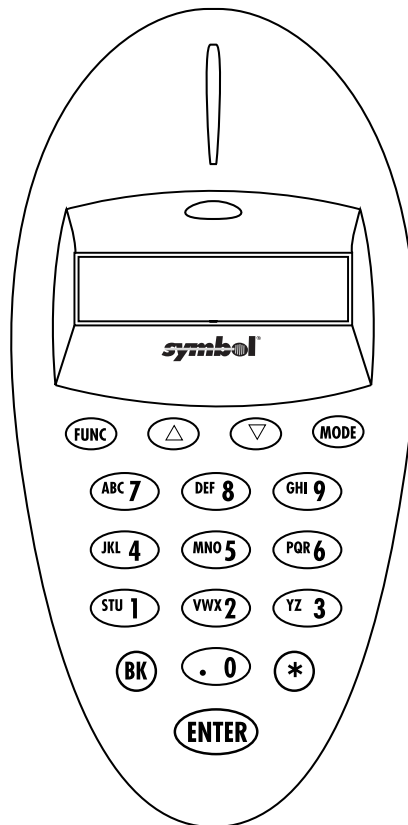


Figure 3-6. Phaser Keypad

Troubleshooting

Refer to [Appendix B, Messages and Error Codes](#) for additional troubleshooting information.

Nothing happens when you follow the operating instructions?

You Should

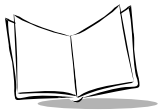
- Check that the power supply is attached to the cradle or to the cable.
- Check for loose cable connections at the scanner, cradle, AC power supply, or host device.
- Check the scanner's battery.
- Make sure the device is programmed to read the type of bar code you want to scan.
- Check the symbol to make sure it is not defaced.
- Try scanning similar symbols of the same code type.
- Be sure you are within the proper scanning range.
- Reboot the scanner (hold down the ENTER key for about 10-20 seconds) and try scanning again.

The scanner emits transmit errors (error beeps after decode)?

You Should

- Check that the scanner is powered up and that its cable connections are secure.
- Be sure the cable connection to the host is secure.
- Check that the appropriate host type is selected.

Note: *If after performing these checks the symbol still does not scan, contact your distributor or call the Symbol Support Center. See page xi for the telephone number.*



The scanner does not decode the bar codes in the system menu section?

Your scanner firmware does not support the system menu scanning bar codes feature.

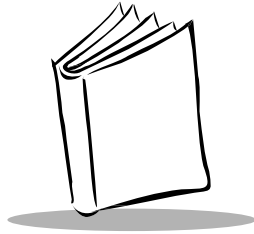
You Should

Enter the system menu using the keypad. See *System Menu* on page 3-7.

The scanner does not decode the bar codes in the parameter menus section ([Chapter 5, Parameter Menus](#))?

You Should

Enter the system menu using the keypad. See *System Menu* on page 3-7. Go to *Parameter Control* on page 3-12.



Chapter 4

Maintenance And Specifications

Introduction

This chapter explains how to maintain your scanner and the specifications for it.

Maintenance

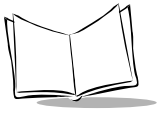
- ♦ Do not allow any abrasive material to touch the scanner window.
- ♦ Remove any dirt particles with a damp cloth.
- ♦ Wipe the scanner window using a damp cloth, and if necessary, a non-ammonia based detergent.
- ♦ Do not spray water or other cleaning liquids directly into the scanner window.
- ♦ If the contacts between the scanner and cradle become dirty, clean them with either a pencil eraser or a cotton swab dampened with alcohol.
- ♦ If a significant decrease in battery life is noticed and does not correspond to increased usage, consider replacing the battery.

Changing the Battery

Once a battery is fully charged, it will generally last up to 12 hours without being returned to the cradle. By returning it to the cradle during the day, you extend this time.

Removing the Battery

1. Slide the battery compartment release switch down.



2. Remove the battery compartment cover.

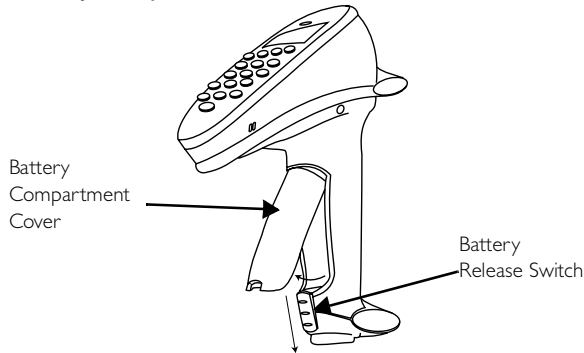


Figure 4-1. Removing the Battery Compartment Cover

3. Slide the battery towards the bottom of the scanner.
4. Pull the bottom of the battery out and away from the scanner.



Figure 4-2. Pulling the Battery Out

Replacing the Battery

1. Seat the battery fully in the scanner.
2. Slide it up in the handle.
3. Replace the battery compartment cover.
4. Slide the release latch up to secure the cover in place.

Charge Status LED Indications

The LED indicator on the cradle uses flashing patterns to display the charger status, as shown in the table below.

Table 4-1. Cradle LED Indications

LED	Status
Off	The scanner is not in the cradle or has not been properly inserted into the cradle.
Blinking Slowly	The scanner is properly seated in the cradle and charging will begin shortly.
Blinking Rapidly	The battery is actively charging.
On	Battery charging is complete.

Accessories

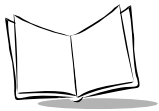
Required Accessories

Phaser scanners are sent as a package with required accessories. Optional accessories are available at extra cost.

Optional Accessories

Optional accessories include various stands and holders, which are supplied at extra cost. Additional units of standard accessories may also be purchased at extra cost.

One such optional accessory is the IntelliStand, which permits hands-free operation of the Phaser scanner. It permits the Phaser to scan continuously and automatically read a bar code when one is presented in front of the scanner. The Phaser must be operating from a cable with an external power supply to work with the IntelliStand, as it cannot work with battery power under these conditions. For more information about the IntelliStand, refer to the *IntelliStand Quick Reference Guide* p/n 70-11567-xx.



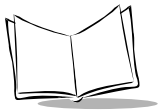
Technical Specifications

Table 4-2. Technical Specifications for P460/P360 1D Scanner

Item	Description
Decode Capability	UPC/EAN, Bookland EAN, Code 11, Code 39, Code 39 Full ASCII, Trioptic Code 39, Code 93, Codabar, Interleaved 2 of 5, Code 128, EAN 128, Discrete 2 of 5, MSI Plessey, and Coupon Code with auto-discriminate between all of the above code types except for Code 39 and Code 39 Full ASCII.
Scanner Beeper Operation	User-selectable: Enabled, Disabled.
Scan Repetition Rate	36 (± 5) scans/sec (bidirectional)
Roll (Skew) Tolerance	$\pm 30^\circ$ from normal
Pitch	$\pm 65^\circ$ from normal
Yaw	$\pm 60^\circ$ from normal
Decode Depth of Field	See <i>P460/P360 1D Scanner Decode Zone</i> on page 3-18.
Print Contrast Minimum	20% absolute dark/light differential, measured at the wavelength of the laser diode.
Ambient Light Immunity	
Artificial Lighting	450 ft. candles 4844 lux
Sunlight	10,000 ft. candles 107,644 lux (@8 in. (20 cm) on low density bar codes)
Operating Temperature	P460: 32° to 104°F 0° to 40°C P360: -4° to 122°F -20° to 50°C
Storage Temperature	-40° to 158°F -40° to 70°C
Humidity	5% to 95% (non-condensing)
Durability (Scanner)	P460: 5-ft. (1.5 m) P360: 6-ft. (1.8 m) Drop to concrete over entire temperature range
Sealing	P360: All components sealed to IP 54 specification against wind blown dust and rain
Dimensions	
Height	7.0 in. (17.8 cm)
Width	9.2 in. (13.5 cm)
Depth	3.5 in. (9.8 cm)
Laser Classifications	CDRH Class II EN 60825 Class 2 IEC 825 Class 2

Table 4-3. Technical Specifications for P460/P360 2D Scanner

Item	Description
Decode Capability	PDF417, MicroPDF417, UPC-A, UPC-E, EAN 8, Ean 13, Code 39, Tri-Optic Code 39, Code 93, Discrete 2 of 5, Bookland EAN, UPC Coupon Code, Code 39 Full ASCII, Code 128, Interleaved 2 of 5, Codabar, UCC.EAN 128 with full auto-discrimination between all Symbolologies, MSI Plessey, Code 11.
Scanner Beeper Operation	User-selectable: Enabled, Disabled.
Scan Element Type	Raster Scanning
Light Source	650 nm laser diode/1.2 mW max
Scan Rate	560 scans/sec
Frame Rate	25 frames/sec
Optical Resolution	Minimum X-dimension: 1D=6.0 mil (0.15 mm); 2D=6.6 mil (0.17 mm) Minimum Y-dimension: 3X
Minimum Reflectance Difference	25% (1D symbolologies) 35% (PDF417) measured at 650 nm
Decode Depth of Field	See <i>P460/P360 2D Scanner Decode Zone</i> on page 3-19.
Ambient Light Immunity	
Artificial Lighting	450 ft. candles 4844 lux
Sunlight	8,000 ft. candles 86,111 lux (@8 in. (20 cm) on low density bar codes)
Operating Temperature	P460: 32° to 104°F 0° to 40°C P360: -4° to 122°F -20° to 50°C
Storage Temperature	-40° to 158°F -40° to 70°C
Humidity	5% to 95% (non-condensing)
Durability (Scanner)	P460: 5-ft. (1.5 m) P360: 6-ft. (1.8 m) Drop to concrete over entire temperature range
Sealing	P360: All components sealed to IP 54 specification against wind blown dust and rain
Dimensions	
Height	7.0 in. (17.8 cm)
Width	9.2 in. (13.5 cm)
Depth	3.5 in. (9.8 cm)
Laser Classifications	CDRH Class II EN 60825 Class 2 IEC 825 Class 2



Pin-outs

Cradle

The following table shows the pin-outs for both COM1 and COM2 on the cradle.

Table 4-4. Cradle Pin-outs

Pin	Cradle
1	BREQ
2	VCC (out of cradle)
3	Ground
4	Synapse Data
5	Synapse Clock
6	RXD (into cradle)
7	TXD (out of cradle)
8	BACK
9	CTS
10	RTS

Scanner

The following table shows the pin-outs for the scanner.

Table 4-5. Scanner Pin-outs

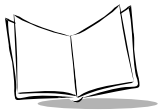
Pin	Scanner			
1	Not Used			
2	Power (+9V) ¹			
3	GND			
4	Synapse Data			
5	Synapse Clock			
6	RXD (into scanner)			
7	TXD (out of scanner)			
8	Enable Charging ²			
9	CTS			
10	RTS			

1.

Scanner:	1D		2D	
Battery Charging:	No	Yes	No	Yes
Requires +9V @:	250mA	1A	350mA	1A

2.

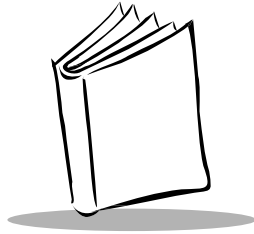
If Pin 8 is connected to Pin 2 the scanner battery charges; ***make sure you use a +9V @ 1 Amp power supply***. If Pin 8 is not connected to Pin 2, the scanner operates but the scanner battery does not charge.



Beeper Indications

Table 4-6. Beeper Indications

Beeper Sequence	Indication
Standard Use	
Short high tone	A bar code symbol was decoded (if decode beeper is enabled).
4 Beeps - long low tone	A transmission error has been detected in a scanned symbol. The data is ignored. This occurs if a unit is not properly configured. Check option settings.
5 Beeps - low tone	Convert or format error.
Hi/hi/hi/lo tone	RS-232 receive error.
4 Beeps - short hi	Battery requires recharging.
Short low/Short high tone	The Scanner detected external power supplied to it by the cradle or a cable.
Short high/Short low tone	External power has been removed from the scanner.
Parameter Menu Scanning	
Short high tone	Correct entry scanned or correct menu sequence performed.
Long low/Long high tone	Input error, incorrect bar code or "Cancel" scanned, wrong entry, incorrect bar code programming sequence; remain in program mode.
Hi/lo tone	Keyboard parameter selected. Enter value using bar code keypad.
Hi/lo/hi/lo tone	Successful program exit with change in the parameter setting.



Chapter 5

Parameter Menus

Introduction

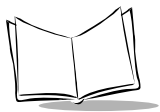
This chapter has the optional parameter bar codes necessary to program the Phaser scanner.

Operational Parameters

The Phaser is shipped with the settings shown in [Table 5-1](#). These default values are stored in non-volatile memory and are preserved even when the scanner is powered down. You can change these default values by scanning the appropriate bar codes included in this manual. These new values replace the standard default values in memory. The default parameter values can be recalled by scanning the bar code in the section [Set Default Parameter](#) on page 5-9.

The scanner automatically detects which cable it is attached to, either an RS-232 or a Synapse cable. If it is attached to an RS-232 cable and has either an ICL, Nixdorf, or Fujitsu host interface, then scan the appropriate bar code from page [5-13](#) after power up. Any other host interface works with the default setting.

If it is attached to a Synapse cable, plug everything together as described on page [2-6](#) and then follow the directions that come with the Synapse cable for setting up the host interface.



The following table lists the defaults for all parameters. If you wish to change any option, scan the appropriate bar code(s).

Table 5-1. DefaultTable e

Parameter	1D P460/P360 Defaults	2D P460/P360 Defaults	Page Number
Set Default Parameter	All Defaults	All Defaults	5-9
Communication Protocol			
Scan & Transmit Application	RS232/Synapse	RS232/Synapse	5-10
Batch/Inventory Application	MCL-Net	MCL-Net	5-11
RS232 Host Type	Standard	Standard	5-12
Sleep Time	10 seconds	10 seconds	5-15
Date Separator	Forward Slash (/)	Forward Slash (/)	5-16
Hour Type	12 Hour	12 Hour	5-17
Decimal Separator	Decimal Point (.)	Decimal Point (.)	5-18
Date Format	MM/DD/YYYY	MM/DD/YYYY	5-19
Key Click	Enable	Enable	5-20
Laser On Time	3.0 seconds	3.0 seconds	5-21
Scan Stand Options			
Time Delay to Low Power Mode	N/A	30 seconds	5-22
Time Out Between Same Symbols	N/A	0.6 seconds	5-23
Time Out Between Different Symbols	N/A	0 seconds	5-23
Beeper Options			
Beeper Tone	High Frequency	High Frequency	5-25

Table 5-1. DefaultTable (Continued)

Parameter	1D P460/P360 Defaults	2D P460/P360 Defaults	Page Number
Beeper Volume	High	High	5-26
Power Detect Beep	Enable	Enable	5-27
Beep After Good Decode	Enable	Enable	5-28
Decode Options			
Transmit “No Read” Message	Disable	Disable	5-29
UPC/EAN			
UPC-A	Enable	Enable	5-30
UPC-E	Enable	Enable	5-30
UPC-E1	Disable	Disable	5-30
EAN-8	Enable	Enable	5-31
EAN-13	Enable	Enable	5-31
Bookland EAN	Disable	Disable	5-32
Decode UPC/EAN Supplementals	Ignore	Ignore	5-33
Decode UPC/EAN Supplemental Redundancy	7	7	5-34
Transmit UPC-A Check Digit	Enable	Enable	5-35
Transmit UPC-E Check Digit	Enable	Enable	5-35
Transmit UPC-E1 Check Digit	Enable	Enable	5-35
UPC-A Preamble	System Character	System Character	5-36
UPC-E Preamble	System Character	System Character	5-37

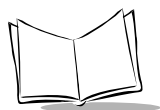


Table 5-1. DefaultTable (Continued)

Parameter	1D P460/P360 Defaults	2D P460/P360 Defaults	Page Number
UPC-E1 Preamble	System Character	System Character	5-38
Convert UPC-E to A	Disable	Disable	5-39
Convert UPC-E1 to A	Disable	Disable	5-40
EAN-8 Zero Extend	Disable	Disable	5-41
Convert EAN-8 to EAN-13 Type	Type is EAN-13	Type is EAN-13	5-42
UPC/EAN Coupon Code	Disable	Disable	5-43
Code 128			
Code 128	Enable	Enable	5-44
UCC/EAN-128	Enable	Enable	5-45
ISBT-128	N/A	Disable	5-46
Code 39			
Code 39	Enable	Enable	5-47
Trioptic Code 39	Disable	Disable	5-48
Set Length(s) for Code 39	2 to 55	2 to 55	5-50
Code 39 Check Digit Verification	Disable	Disable	5-51
Transmit Code 39 Check Digit	Disable	Disable	5-52
Code 39 Full ASCII Conversion	Disable	Disable	5-53
Convert Code 39 to Code 32	Disable	Disable	5-54
Code 32 Prefix	Disable	Disable	5-55

Table 5-1. DefaultTable (Continued)

Parameter	1D P460/P360 Defaults	2D P460/P360 Defaults	Page Number
Code 93			
Code 93	Disable	Disable	5-56
Set Length(s) for Code 93	4-55	4-55	5-57
Interleaved 2 of 5			
Interleaved 2 of 5	Enable	Enable	5-59
Set Length(s) for I 2 of 5	14	14	5-60
I 2 of 5 Check Digit Verification	Disable	Disable	5-62
Transmit I 2 of 5 Check Digit	Disable	Disable	5-63
Convert I 2 of 5 to EAN 13	Disable	Disable	5-64
Discrete 2 of 5			
Discrete 2 of 5	Disable	Disable	5-65
Set Length(s) for D 2 of 5	12	12	5-66
Codabar			
Codabar	Disable	Disable	5-68
Set Lengths for Codabar	5-55	5-55	5-70
CLSI Editing	Disable	Disable	5-71
NOTIS Editing	Disable	Disable	5-72
MSI Plessey			
MSI Plessey	Disable	Disable	5-73
Set Length(s) for MSI Plessey	Any Length	Any Length	5-75

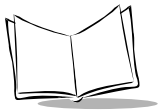


Table 5-1. DefaultTable (Continued)

Parameter	1D P460/P360 Defaults	2D P460/P360 Defaults	Page Number
MSI Plessey Check Digits	One	One	5-76
Transmit MSI Plessey Check Digit	Disable	Disable	5-77
MSI Plessey Check Digit Algorithm	Mod 10/Mod 10	Mod 10/Mod 10	5-78
PDF			
Enable/Disable PDF417	N/A	Enable	5-79
Scanning Mode	N/A	Smart Raster	5-80
Raster Height	N/A	15	5-81
Raster Expansion	N/A	11	5-81
Aiming Mode	N/A	Slab Raster	5-83
Micro PDF			
Enable/Disable Micro PDF	N/A	Disable	5-84
Code 128 Emulation	N/A	Enable	5-85
UCC/EAN-128 Emulation	N/A	Ignore Linked Symbols	5-86
Macro PDF			
Macro PDF Transmit/Decode Mode	N/A	Buffer All Symbols/ Transmit Macro PDF when Complete	5-88
Transmit Each Symbol in Codeword Format	N/A	Disable	5-90
Transmit Unknown Codewords	N/A	Disable	5-91
Escape Character	N/A	None	5-92

Table 5-1. DefaultTable (Continued)

Parameter	1D P460/P360 Defaults	2D P460/P360 Defaults	Page Number
ECI			
Delete Character Set ECIs	N/A	Enable	5-93
ECI Decoder	N/A	Enable	5-94
Transmit Macro PDF User-Selected Field			
Transmit File Name	N/A	Disable	5-95
Transmit Block Count	N/A	Disable	5-96
Transmit Time Stamp	N/A	Disable	5-96
Transmit Sender	N/A	Disable	5-97
Transmit Addressee	N/A	Disable	5-97
Transmit Checksum	N/A	Disable	5-98
Transmit File Size	N/A	Disable	5-98
Transmit Macro PDF Control Header	N/A	Disable	5-99
Last Block Marker	N/A	Disable	5-99
Flush Macro Buffer	N/A	N/A	5-100
Abort Macro PDF Entry	N/A	N/A	5-100
Security Options			
Linear Code Type Security Levels	1	2	5-101
Bi-directional Redundancy	Disable	Disable	5-103
UPC/EAN Security Levels	0	0	5-104
RS-232C			

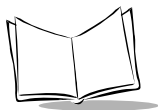
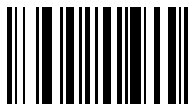


Table 5-1. DefaultTable (Continued)

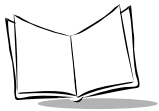
Parameter	1D P460/P360 Defaults	2D P460/P360 Defaults	Page Number
RS-232 Host Type	Standard	Standard	5-12
Baud Rate	9600	9600	5-107
Parity	None	None	5-108
Check Receive Errors	Disable	Do Not Check	5-109
Hardware Handshaking	None	None	5-110
Software Handshaking	None	None	5-112
Host Serial Response Time-out	2 Sec.	2 Sec.	5-114
RTS Line State (cable use only)	Low	Low	5-115
Stop Bit Select	1	1	5-116
ASCII Format	8-Bit	8-Bit	5-116
Beep on <BEL>	Disable	Disable	5-117
Intercharacter Delay	0	0	5-117
MCL-Net			
MCL-Net Baud Rate	38400	38400	5-118
MCL-Net Hex Addressing Mode	Disable	Disable	5-120
Scanner Address	001	001	5-120
MCL-Net Transmit Retries	3	3	5-121
MCL-Net Frame Timeout	500 ms	500 ms	5-121

Set Default Parameter

Scanning this bar code returns all parameters to the values listed in [Table 5-1](#).



SET ALL DEFAULTS



Communication Protocol

The bar codes below set the communication protocol used by the default applications.

- ♦ Scan & Transmit application for corded operation
- ♦ Batch/Inventory application for cordless operation

The communication options are RS232/Synapse or MCL-Net. If you select RS232/Synapse, the scanner automatically identifies whether an RS232 or Synapse interface is required. MCL-Net allows the scanner to communicate with a host running MCL-Link or MCL-Link Lite.

The communication protocols for the two default applications can be set independently of each other. In fact, the default values are set this way; the Scan & Transmit application is set for RS232/Synapse and the Batch/Inventory application is set for MCL-Net.

Scan & Transmit Application

This communication protocol is used for the real time scanning and transmission of data to a host when a cable is attached.



RS232/SYNAPSE
(Scan & Transmit application only)



MCL-NET
(Scan & Transmit application only)

Batch/Inventory Application

This communication protocol is used when you are ready to transmit your batch records (data collected when the scanner was used without a cable attached) to a host.

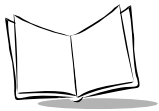


RS232/SYNAPSE
(Batch/Inventory application only)



MCL-NET
(Batch/Inventory application only)

Note: *These communication protocol parameters only work with the default applications and will not work with applications created with MCL-Designer.*



Host Type

RS-232 Host Types

Most RS-232C hosts work fine with the default settings, however, three RS-232C hosts are set up with their own parameter default settings. Selecting the ICL, Fujitsu or Nixdorf RS-232C host interface sets the defaults listed below. These defaults take precedence over Standard RS-232 defaults. So, if you select the Fujitsu RS-232C first, and then select the Standard RS-232 defaults, the Fujitsu defaults still take precedence. To return to the factory set defaults, scan the **SET ALL DEFAULTS** bar code on page [5-9](#).

Table 5-2. Terminal Specific RS-232C

Parameter	Standard	ICL	FUJITSU	NIXDORF Mode A/ Mode B
Transmit Code ID	No	Yes	Yes	Yes
Data Transmission Format	Data as is	Data/Suffix	Data/Suffix	Data/Suffix
Suffix	CR/LF	CR	CR	CR
Baud Rate	9600	9600	9600	9600
Parity	None	Even	None	Odd
Hardware Handshaking	None	RTS/CTS Option 3	None	RTS/CTS Option 3
Software Handshaking	None	None	None	None
Serial Response Time-out	2 Sec.	9.9 Sec.	2 Sec.	9.9 Sec.
Stop Bit Select	One	One	One	One
ASCII Format	8-Bit	8-Bit	8-Bit	8-Bit
Beep On <BEL>	Disabled	Disabled	Disabled	Disabled
RTS Line State	Low	High	Low	*Low = No data to send

*In the Nixdorf Mode B, if CTS is Low, transmission of scan data is disabled. When CTS is High, bar code data is transmitted to the host.

Scan the appropriate bar code below to select an RS-232C Host Interface.



STANDARD RS-232C



ICL RS-232C



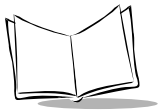
NIXDORF RS-232C Mode A



NIXDORF RS-232C Mode B



FUJITSU RS-232C



Code ID Characters for RS232C Host Types

Selecting the ICL, Fujitsu, or Nixdorf RS-232C host interface enables the transmission of Code ID Characters as listed below. These Code ID Characters are not programmable and are separate from the Transmit Code ID feature. The Transmit Code ID feature should not be enabled for these hosts.

Table 5-3. Terminal Specific Code ID Characters

	ICL	FUJITSU	NIXDORF
UPC-A	"A"	"A"	"A"
UPC-E	"E"	"E"	"C0"
EAN-8	"FF"	"FF"	"B"
EAN-13	"F"	"F"	"A"
Code 39	"C" <len>	None	"M"
Codabar	"N" <len>	None	"N"
Code 128	"L" <len>	None	"K"
I 2 of 5	"I" <len>	None	"I"
Code 93	None	None	"L"
D 2 of 5	"H" <len>	None	"H"
UCC/EAN 128	"L" <len>	None	"P"
MSI/Plessey	None	None	"O"
Bookland EAN	"F"	"F"	"A"
Trioptic	None	None	None

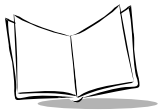
Sleep Time

Scan the bar code below to select how long the scanner will “stay awake” (not power down) in seconds after a trigger pull or a key press. First scan this bar code, then enter a range from 05 to 32, using the [Numeric Bar Codes](#) on page 5-122. It can stay awake from 5 seconds to 32 seconds.

Note: *Allowing the scanner to stay awake longer than originally programmed may effect the battery life time for that session before needing a charge.*



SLEEP TIME (RANGE OF 5 TO 32 SECONDS)



Date Separator

Scan the appropriate bar code below to select which separator to use when displaying the date. Choose FORWARD SLASH, DASH, COLON or NONE.



FORWARD SLASH (/)



DASH (-)



COLON (:)



NONE

Hour Type

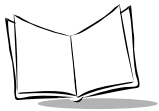
Scan the appropriate bar code below to select how to display the hour and transmit it to the host device. Choose 12 HOUR (6:00 pm) or 24 HOUR (18:00).



24 HOUR



12 HOUR



Decimal Separator

Scan the appropriate bar code below to select what separator to display when you hit the decimal point key on the keypad. Choose DECIMAL POINT (.) or COMMA (,).



DECIMAL POINT (.)



COMMA (,)

Date Format

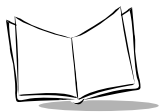
Scan the appropriate bar code below to select how to format the date when it is displayed and transmitted to the host device. Choose MM/DD/YYYY or DD/MM/YYYY.



MM/DD/YYYY



DD/MM/YYYY



Key Click

Scan the appropriate bar code below to select whether the keypad click is enabled or not. Choose ENABLE or DISABLE.



ENABLE



DISABLE

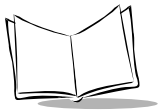
Laser On Time

This parameter sets the maximum time decode processing continues during a scan attempt. It is programmable in 0.1 second increments from 0.5 to 9.9 seconds.

Scan the bar code below to set a Laser On Time. Next scan two numeric bar codes beginning on page 5-122 that correspond to the desired time. Time less than 1.0 second must have a leading zero. For example, to set a Time On of 0.5 seconds, scan the bar code below, then scan the “0” and “5” bar codes. If you make an error, or wish to change your selection, scan **CANCEL** on page 5-124.



LASER ON TIME



Scan Stand Options

The Scan Stand feature is supported only when the cord is attached to the scanner.

Time Delay to Low Power Mode

For extending laser life in scan stand mode, select the time the scanner remains active following a successful decode. Selectable options include 30 seconds, 1 minute, 2 minutes, 3 minutes. To awaken the scanner in low power mode, present a symbol to the scan path. A successful decode restores it to normal blinking. The recommended delay is 30 seconds.



30 Second Delay



1 Minute Delay



2 Minute Delay



3 Minute Delay

Timeout Between Decodes

Timeout Between Decodes, Same Symbol is used in scan stand mode to prevent the beeper from continuously beeping when a symbol is left in the scanner's field of view. It is programmable in 0.1 second increments from 0.0 to 9.9 seconds. The recommended interval is 0.6 seconds.

Timeout Between Decodes, Different Symbols is used in scan stand mode to prevent the beeper from beeping when a different symbol appears in the scanner's field of view before the timeout period between decodes has expired. This is programmable in 0.1 second increments from 0.0 to 9.9 seconds. The recommended value is 0.0 seconds.

Select the timeouts between decodes for the same or different symbols.

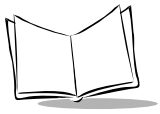
1. Scan the option bar code you wish to set.
2. Scan two bar codes on the next page which correspond to the desired interval, in 0.1 second increments.
3. If you make an error, or wish to change your selection, scan CANCEL.



**Timeout Between Decodes -
The Same Symbol**



**Timeout Between Decodes -
Different Symbols**



Timeout Between Decodes (Continued)



0



1



2



3



4



5



6



7



8



9



Cancel

Beeper Options

Beeper Tone

Scan the appropriate bar code below to select a decode beep frequency (tone). Choose LOW FREQUENCY, MEDIUM FREQUENCY, or HIGH FREQUENCY.



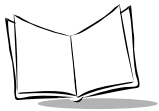
LOW FREQUENCY



MEDIUM FREQUENCY



HIGH FREQUENCY



Beeper Volume

Scan the appropriate bar code below to select a beeper volume. Choose LOW VOLUME, MEDIUM VOLUME, or HIGH VOLUME.



LOW VOLUME



MEDIUM VOLUME



HIGH VOLUME

Power Detect Beep

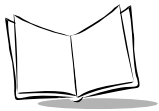
Scan the appropriate barcode below to enable or disable the Power Detection Beep.



POWER DETECT BEEP DISABLED



POWER DETECT BEEP ENABLED



Beep After Good Decode

Scan the appropriate bar code below to select whether or not the scanner beeps after a good decode. If DO NOT BEEP is selected, the beeper still operates during parameter menu scanning and indicates error conditions.



BEEP AFTER GOOD DECODE



DO NOT BEEP AFTER GOOD DECODE

Decode Options

Transmit “No Read” Message

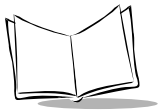
Scan the appropriate bar code below to select whether or not a “No Read” message is transmitted. When enabled, if a symbol does not decode, “NR” is transmitted. When disabled, if a symbol does not read, nothing is sent to the host.



ENABLE NO READ



DISABLE NO READ

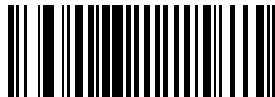


Enable/Disable UPC-E/UPC-A/UPC-E1

Scan the appropriate bar code below to enable or disable UPC-E or UPC-A.



ENABLE UPC-E



DISABLE UPC-E



ENABLE UPC-A



DISABLE UPC-A



ENABLE UPC-E1



DISABLE UPC-E1

Enable/Disable EAN-8/EAN-13

Scan the appropriate bar code below to enable or disable EAN-8 or EAN-13.



ENABLE EAN-8



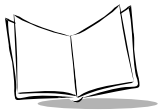
DISABLE EAN-8



ENABLE EAN-13



DISABLE EAN-13



Enable/Disable Bookland EAN

Scan the appropriate bar code below to enable or disable Bookland EAN.



ENABLE BOOKLAND EAN



DISABLE BOOKLAND EAN

Decode UPC/EAN Supplementals

Supplementals are characters (either 2 or 5) that are added on according to specific code format conventions (e.g., UPC A+2, UPC E+2, EAN 8+2). Three options are available.

- ♦ If **Decode UPC/EAN with supplementals** is selected, UPC/EAN symbols without supplemental characters are not decoded.
- ♦ If **Ignore UPC/EAN with supplementals** is selected, UPC/EAN symbols with supplemental characters are decoded and the supplemental characters are ignored.
- ♦ If **Autodiscriminate UPC/EAN supplementals** is selected, UPC/EAN symbols, either with or without supplementals, are decoded. If selected, choose an appropriate [Decode UPC/EAN Supplemental Redundancy](#) value from the next page.

Note: *To minimize the risk of invalid data transmission, select whether to read or ignore supplemental characters.*



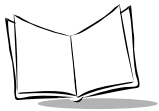
DECODE UPC/EAN WITH SUPPLEMENTALS



IGNORE UPC/EAN WITH SUPPLEMENTALS



AUTODISCRIMINATE UPC/EAN SUPPLEMENTALS



Decode UPC/EAN Supplemental Redundancy

With Autodiscriminate UPC/EAN Supplementals selected, this option adjusts the number of times a symbol without supplementals is decoded before transmission. The range is from two to 20 times. Five or above is recommended when decoding a mix of UPC/EAN symbols with and without supplementals, and the autodiscriminate option is selected.

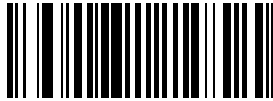
Scan the bar code below to select a decode redundancy value. Next scan two numeric bar codes beginning on page [5-122](#). Single digit numbers must have a leading zero. If you make an error, or wish to change your selection, scan [CANCEL](#) on page 5-124.



**DECODE UPC/EAN
SUPPLEMENTAL REDUNDANCY**

Transmit UPC-A/UPC-E/UPC-E1 Check Digit

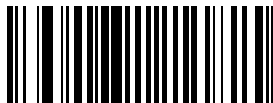
Scan the appropriate bar code below to transmit the symbol with or without the UPC-A, UPC-E, or UPC-E1 check digit.



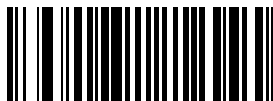
TRANSMIT UPC-A CHECK DIGIT



DO NOT TRANSMIT UPC-A CHECK DIGIT



TRANSMIT UPC-E CHECK DIGIT



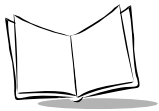
DO NOT TRANSMIT UPC-E CHECK DIGIT



TRANSMIT UPC-E1 CHECK DIGIT



DO NOT TRANSMIT UPC-E1 CHECK DIGIT

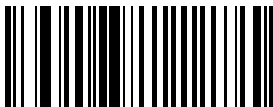


UPC-A Preamble

Three options are given for lead-in characters for UPC-A symbols transmitted to the host device: transmit system character only, transmit system character and country code ("0" for USA), and no preamble transmitted. The lead-in characters are considered part of the symbol.



NO PREAMBLE
(<DATA>)



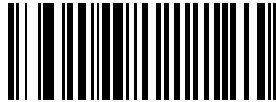
SYSTEM CHARACTER
(<SYSTEM CHARACTER> <DATA>)



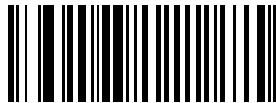
SYSTEM CHARACTER & COUNTRY CODE
(< COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)

UPC-E Preamble

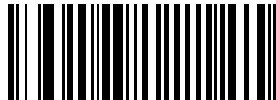
Three options are given for lead-in characters for UPC-E symbols transmitted to the host device: Transmit system character only, transmit system character and country code ("0" for USA), and no preamble transmitted. The lead-in characters are considered part of the symbol.



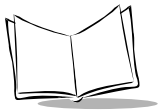
NO PREAMBLE
(<DATA>)



SYSTEM CHARACTER
(<SYSTEM CHARACTER> <DATA>)



SYSTEM CHARACTER & COUNTRY CODE
(< COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)



UPC-E1 Preamble

Three options are given for lead-in characters for UPC-E1 symbols transmitted to the host device: Transmit system character only, transmit system character and country code ("0" for USA), and no preamble transmitted. The lead-in characters are considered part of the symbol.



NO PREAMBLE
(<DATA>)



SYSTEM CHARACTER
(<SYSTEM CHARACTER> <DATA>)



SYSTEM CHARACTER & COUNTRY CODE
(< COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)

Convert UPC-E to UPC-A

This parameter converts UPC-E (zero suppressed) decoded data to UPC-A format before transmission. After conversion, data follows UPC-A format and is affected by UPC-A programming selections (e.g., Preamble, Check Digit).

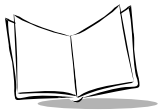
Scanning **DO NOT CONVERT UPC-E TO UPC-A** allows you to transmit UPC-E (zero suppressed) decoded data.



**CONVERT UPC-E TO UPC-A
(ENABLE)**



**DO NOT CONVERT UPC-E TO UPC-A
(DISABLE)**



Convert UPC-E1 to UPC-A

This parameter converts UPC-E1 decoded data to UPC-A format before transmission. After conversion, data follows UPC-A format and is affected by UPC-A programming selections (e.g., Preamble, Check Digit).

Scanning **DO NOT CONVERT UPC-E1 TO UPC-A** allows you to transmit UPC-E1 decoded data.



**CONVERT UPC-E1 TO UPC-A
(ENABLE)**



**DO NOT CONVERT UPC-E1 TO UPC-A
(DISABLE)**

EAN Zero Extend

If this parameter is enabled, five leading zeros are added to decoded EAN-8 symbols to make them compatible in format to EAN-13 symbols.

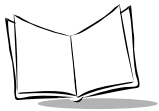
Disabling this parameter returns EAN-8 symbols to their normal format.



ENABLE EAN ZERO EXTEND



DISABLE EAN ZERO EXTEND



Convert EAN-8 to EAN-13 Type

When EAN Zero Extend is enabled, this parameter gives you the option of labeling the extended symbol as either an EAN-13 bar code, or an EAN-8 bar code.

When EAN Zero Extend is disabled, this parameter has no effect on bar code data.



TYPE IS EAN-13



TYPE IS EAN-8

UPC/EAN Coupon Code

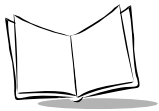
When this parameter is enabled, the Phaser decodes UPC-A, UPC-A with 2 supplemental characters, UPC-A with 5 supplemental characters, and UPC-A/EAN128 bar codes. [AUTODISCRIMINATE UPC/EAN SUPPLEMENTALS](#) on page 5-33 must be enabled.



ENABLE UPC/EAN COUPON CODE



DISABLE UPC/EAN COUPON CODE



Enable/Disable Code 128

Scan the appropriate bar code below to enable or disable Code 128.



ENABLE CODE 128



DISABLE CODE 128

Note: *The “|” character and the NULL character cannot be embedded in the barcode to be scanned when using Code 128.*

Enable/Disable UCC/EAN-128

Scan the appropriate bar code below to enable or disable UCC/EAN-128. (See [Appendix A, Bar Code Information](#) for details on UCC/EAN-128.)



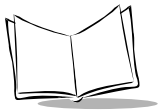
ENABLE UCC/EAN-128



DISABLE UCC/EAN-128

Lengths for Code 128

No length setting is required for Code 128. The default setting is Any Length.



Enable/Disable ISBT 128 (2D Scanner only)

To enable or disable ISBT 128, scan the appropriate bar code below.



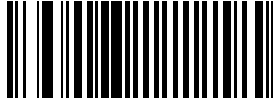
Enable ISBT 128



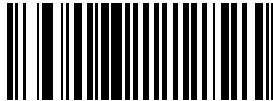
Disable ISBT 128

Enable/Disable Code 39

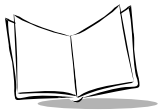
Scan the appropriate bar code below to enable or disable Code 39.



ENABLE CODE 39



DISABLE CODE 39



Enable/Disable Trioptic Code 39

Trioptic Code 39 symbols always contain six characters. Trioptic Code 39 and Code 39 Full ASCII cannot be enabled simultaneously. If you get an error beep when enabling Trioptic Code 39, disable Code 39 Full ASCII and try again. To enable or disable Trioptic Code 39, scan the appropriate bar code below.



ENABLE TRIOPTIC CODE 39



DISABLE TRIOPTIC CODE 39

Set Lengths for Code 39

Lengths for Code 39 may be set for any length, one or two discrete lengths, or lengths within a specific range. The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. If Code 39 Full ASCII is enabled, **Length Within a Range** or **Any Length** are the preferred options.

One Discrete Length - This option allows you to decode only those codes containing a selected length. For example, if you select **Code 39 One Discrete Length**, then scan **1, 4**, only Code 39 symbols containing 14 characters are decoded. Numeric bar codes begin on page [5-122](#). If you make an error, or wish to change your selection, scan [CANCEL](#) on page 5-124.

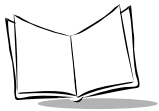


CODE 39 - ONE DISCRETE LENGTH

Two Discrete Lengths - This option allows you to decode only those codes containing two selected lengths. For example, if you select **Code 39 Two Discrete Lengths**, then scan **0, 2, 1, 4**, only Code 39 symbols containing 2 or 14 characters are decoded. Numeric bar codes begin on page [5-122](#). If you make an error, or wish to change your selection, scan [CANCEL](#) on page 5-124.



CODE 39 - TWO DISCRETE LENGTHS



Set Lengths for Code 39 (Continued)

Length Within Range - This option allows you to decode a code type within a specified range. For example to decode Code 39 symbols containing between 4 and 12 characters, first scan **Code 39 Length Within Range**. Then scan **0, 4, 1** and **2** (single digit numbers must always be preceded by a leading zero). Numeric bar codes begin on page [5-122](#). If you make an error, or wish to change your selection, scan **CANCEL** on page 5-124.



CODE 39 - LENGTH WITHIN RANGE

Any Length - Scanning this option allows you to decode Code 39 symbols containing any number of characters.

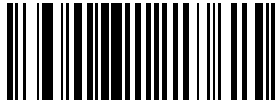


CODE 39 - ANY LENGTH

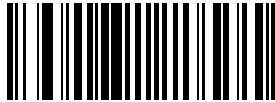
Code 39 Check Digit Verification

When enabled, this parameter checks the integrity of a Code 39 symbol to ensure it complies with specified algorithms.

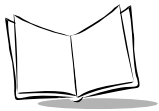
Only those Code 39 symbols which include a modulo 43 check digit are decoded when this parameter is enabled.



ENABLE CODE 39 CHECK DIGIT



DISABLE CODE 39 CHECK DIGIT



Transmit Code 39 Check Digit

Scan the appropriate bar code below to transmit the data with or without the check digit.



**TRANSMIT CODE 39 CHECK DIGIT
(ENABLE)**



**DO NOT TRANSMIT CODE 39 CHECK DIGIT
(DISABLE)**

Enable/Disable Code 39 Full ASCII

Scan the appropriate bar code below to enable or disable Code 39 Full ASCII.

When enabled, the ASCII character set assigns a code to letters, punctuation marks, numerals, and most control keystrokes on the keyboard.

The first 32 codes are non-printable and are assigned to keyboard control characters such as BACKSPACE and RETURN. The other 96 are called printable codes because all but SPACE and DELETE produce visible characters.

Code 39 Full ASCII interprets the bar code special character (\$ + % /) preceding a Code 39 character and assigns an ASCII character value to the pair. For example, when Code 39 Full ASCII is enabled and a **+B** is scanned, it is interpreted as **b**, **%J** as **?**, and **\$H** emulates the keystroke **BACKSPACE**. Scanning **ABC\$M** will output the keystroke equivalent of **ABC ENTER**. Refer to the ASCII table in *Appendix A*.

Code 39 Full ASCII and Trioptic Code 39 cannot be enabled simultaneously. If you get an error beep when enabling Code 39 Full ASCII, disable Trioptic Code 39 and try again.

The scanner does not autodiscriminate between Code 39 and Code 39 Full ASCII.

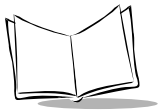


ENABLE CODE 39 FULL ASCII



DISABLE CODE 39 FULL ASCII

Note: The “*]*” character and the NULL character cannot be embedded in the barcode to be scanned when using Code 39 Full ASCII.



Convert Code 39 to Code 32

Scan the appropriate bar code below to enable or disable converting Code 39 to Code 32.

Note: Code 39 must be enabled in order for this parameter to function.



CONVERT CODE 39 TO CODE 32
(ENABLE)



DO NOT CONVERT CODE 39 TO CODE 32
(DISABLE)

Code 32 Prefix

Scan the appropriate bar code below to enable or disable the prefix character “A” to all Code 32 bar codes.

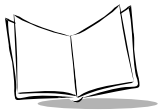
Note: *Convert Code 39 to Code 32 must be enabled for this parameter to function.*



ENABLE CODE 32 PREFIX



DISABLE CODE 32 PREFIX



Enable/Disable Code 93

Scan the appropriate bar code below to enable or disable Code 93.



ENABLE CODE 93



DISABLE CODE 93

Set Lengths for Code 93

Lengths for Code 93 may be set for any length, one or two discrete lengths, or lengths within a specific range. The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains.

One Discrete Length - This option allows you to decode only those codes containing a selected length. For example, if you select **Code 93 One Discrete Length**, then scan **1, 4**, only Code 93 symbols containing 14 characters are decoded. Numeric bar codes begin on page [5-122](#). If you make an error, or wish to change your selection, scan [CANCEL](#) on page 5-124.

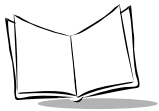


CODE 93 - ONE DISCRETE LENGTH

Two Discrete Lengths - This option allows you to decode only those codes containing two selected lengths. For example, if you select **Code 93 Two Discrete Lengths**, then scan **0, 2, 1, 4**, only Code 93 symbols containing 2 or 14 characters are decoded. Numeric bar codes begin on page [5-122](#). If you make an error, or wish to change your selection, scan [CANCEL](#) on page 5-124.



CODE 93 - TWO DISCRETE LENGTHS



Set Lengths for Code 93 (Continued)

Length Within Range - This option allows you to decode a code type within a specified range. For example to decode Code 93 symbols containing between 4 and 12 characters, first scan **Code 93 Length Within Range**. Then scan **0, 4, 1** and **2** (single digit numbers must always be preceded by a leading zero). Numeric bar codes begin on page [5-122](#). If you make an error, or wish to change your selection, scan [CANCEL](#) on page 5-124.



CODE 93 - LENGTH WITHIN RANGE

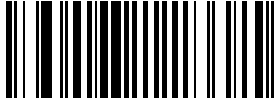
Any Length - Scanning this option allows you to decode Code 93 symbols containing any number of characters.



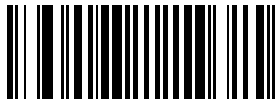
CODE 93 - ANY LENGTH

Enable/Disable Interleaved 2 of 5

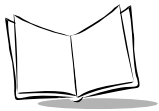
Scan the appropriate bar code below to enable or disable Interleaved 2 of 5.



ENABLE INTERLEAVED 2 OF 5



DISABLE INTERLEAVED 2 OF 5



Set Lengths for Interleaved 2 of 5

Lengths for I 2 of 5 may be set for any length, one or two discrete lengths, or lengths within a specific range. The length of a code refers to the number of characters (i.e., human readable characters) the code contains and includes check digits.

One Discrete Length - This option allows you to decode only those codes containing a selected length. For example, if you select **I 2 of 5 One Discrete Length**, then scan **1, 4**, the only I 2 of 5 symbols decoded are those containing 14 characters. Numeric bar codes begin on page [5-122](#). If you make an error, or wish to change your selection, scan [CANCEL](#) on page 5-124.



I 2 of 5 - ONE DISCRETE LENGTH

Two Discrete Lengths - This option allows you to decode only those codes containing two selected lengths. For example, if you select **I 2 of 5 Two Discrete Lengths**, then scan **0, 2, 1, 4**, the only I 2 of 5 symbols decoded are those containing 2 or 14 characters. Numeric bar codes begin on page [5-122](#). If you make an error, or wish to change your selection, scan [CANCEL](#) on page 5-124.



I 2 of 5 - TWO DISCRETE LENGTHS

Set Lengths for Interleaved 2 of 5 (Continued)

Length Within Range - This option allows you to decode a code type within a specified range. For example to decode I 2 of 5 symbols containing between 4 and 12 characters, first scan **I 2 of 5 Length Within Range**. Then scan **0, 4, 1** and **2** (single digit numbers must always be preceded by a leading zero). Numeric bar codes begin on page [5-122](#). If you make an error, or wish to change your selection, scan **CANCEL** on page 5-124.



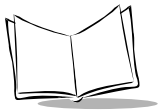
I 2 of 5 - LENGTH WITHIN RANGE

Any Length - Scanning this option allows you to decode I 2 of 5 symbols containing any number of characters.

Note: *Selecting this option may lead to mis-decodes for I 2 of 5 codes.*



I 2 of 5 - ANY LENGTH



I 2 of 5 Check Digit Verification

When enabled, this parameter checks the integrity of an I 2 of 5 symbol to ensure it complies with a specified algorithm, either USS (Uniform Symbology Specification), or OPCC (Optical Product Code Council).



DISABLE



USS CHECK DIGIT



OPCC CHECK DIGIT

Transmit I 2 of 5 Check Digit

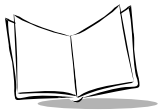
Scan the appropriate bar code below to transmit the data with or without the check digit.



**TRANSMIT I 2 of 5 CHECK DIGIT
(ENABLE)**



**DO NOT TRANSMIT I 2 of 5 CHECK DIGIT
(DISABLE)**



Convert I 2 of 5 to EAN-13

This parameter converts a 14 character I 2 of 5 code into EAN-13, and transmits to the host as EAN-13. In order to accomplish this, the I 2 of 5 code must be enabled, one length must be set to 14, and the code must have a leading zero and a valid EAN-13 check digit.



**CONVERT I 2 of 5 to EAN-13
(ENABLE)**



**DO NOT CONVERT I 2 of 5 to EAN-13
(DISABLE)**

Enable/Disable Discrete 2 of 5

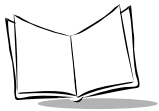
Scan the appropriate bar code below to enable or disable Discrete 2 of 5.



ENABLE DISCRETE 2 OF 5



DISABLE DISCRETE 2 OF 5



Set Lengths for Discrete 2 of 5

Lengths for D 2 of 5 may be set for any length, one or two discrete lengths, or lengths within a specific range. The length of a code refers to the number of characters (i.e., human readable characters) the code contains, and includes check digits.

One Discrete Length - This option allows you to decode only those codes containing a selected length. For example, if you select **D 2 of 5 One Discrete Length**, then scan **1, 4**, the only D 2 of 5 symbols decoded are those containing 14 characters. Numeric bar codes begin on page [5-122](#). If you make an error, or wish to change your selection, scan [CANCEL](#) on page 5-124.



D 2 of 5 - ONE DISCRETE LENGTH

Two Discrete Lengths - This option allows you to decode only those codes containing two selected lengths. For example, if you select **D 2 of 5 Two Discrete Lengths**, then scan **0, 2, 1, 4**, the only D 2 of 5 symbols decoded are those containing 2 or 14 characters. Numeric bar codes begin on page [5-122](#). If you make an error, or wish to change your selection, [CANCEL](#) on page 5-124.



D 2 of 5 - TWO DISCRETE LENGTHS

Set Lengths for Discrete 2 of 5 (Continued)

Length Within Range - This option allows you to decode a code type within a specified range. For example to decode D 2 of 5 symbols containing between 4 and 12 characters, first scan **D 2 of 5 Length Within Range**. Then scan **0, 4, 1** and **2** (single digit numbers must always be preceded by a leading zero). Numeric bar codes begin on page [5-122](#). If you make an error, or wish to change your selection, scan **CANCEL** on page 5-124.



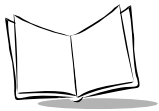
D 2 of 5 - LENGTH WITHIN RANGE

Any Length - Scanning this option allows you to decode D 2 of 5 symbols containing any number of characters.

Note: *Selecting this option may lead to mis-decodes for D 2 of 5 codes.*



D 2 of 5 - ANY LENGTH



Enable/Disable Codabar

Scan the appropriate bar code below to enable or disable Codabar.



ENABLE CODABAR



DISABLE CODABAR

Set Lengths for Codabar

Lengths for Codabar may be set for any length, one or two discrete lengths, or lengths within a specific range. The length of a code refers to the number of characters (i.e., human readable characters) the code contains. It also includes any start or stop characters.

One Discrete Length - This option allows you to decode only those codes containing a selected length. For example, if you select **Codabar One Discrete Length**, then scan **1, 4**, the only Codabar symbols decoded are those containing 14 characters. Numeric bar codes begin on page [5-122](#). If you make an error, or wish to change your selection, scan [CANCEL](#) on page 5-124.

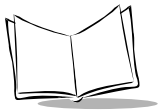


CODABAR - ONE DISCRETE LENGTH

Two Discrete Lengths - This option allows you to decode only those codes containing two selected lengths. For example, if you select **Codabar Two Discrete Lengths**, then scan **0, 2, 1, 4**, the only Codabar symbols decoded are those containing 2 or 14 characters. Numeric bar codes begin on page [5-122](#). If you make an error, or wish to change your selection, scan [CANCEL](#) on page 5-124.



CODABAR - TWO DISCRETE LENGTHS



Set Lengths for Codabar (Continued)

Length Within Range - This option allows you to decode a code type within a specified range. For example to decode Codabar symbols containing between 4 and 12 characters, first scan **Codabar Length Within Range**. Then scan **0, 4, 1** and **2** (single digit numbers must always be preceded by a leading zero). Numeric bar codes begin on page [5-122](#). If you make an error, or wish to change your selection, scan **CANCEL** on page 5-124.



CODABAR - LENGTH WITHIN RANGE

Any Length - Scanning this option allows you to decode Codabar symbols containing any number of characters.

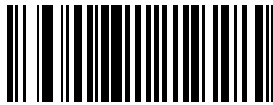


CODABAR - ANY LENGTH

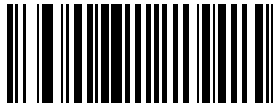
CLSI Editing

If enabled, this parameter strips the start and stop characters and inserts a space after the first, fifth, and tenth characters of a 14-character Codabar symbol.

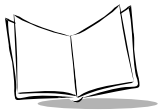
Note: *Symbol length does not include start and stop characters.*



ENABLE CLSI EDITING



DISABLE CLSI EDITING



NOTIS Editing

If enabled, this parameter strips the start and stop characters from a decoded Codabar symbol.



ENABLE NOTIS EDITING



DISABLE NOTIS EDITING

Enable/Disable MSI Plessey

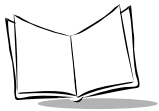
Scan the appropriate bar code below to enable or disable MSI Plessey.



ENABLE MSI PLESSEY



DISABLE MSI PLESSEY



Set Lengths for MSI Plessey

Lengths for MSI Plessey may be set for any length, one or two discrete lengths, or lengths within a specific range. The length of a code refers to the number of characters (i.e., human readable characters) the code contains, and includes check digits.

One Discrete Length - This option allows you to decode only those codes containing a selected length. For example, if you select **MSI Plessey One Discrete Length**, then scan **1, 4**, the only MSI Plessey symbols decoded are those containing 14 characters. Numeric bar codes begin on page [5-122](#). If you make an error, or wish to change your selection, scan **CANCEL** on page 5-124.



MSI PLESSEY - ONE DISCRETE LENGTH

Two Discrete Lengths - This option allows you to decode only those codes containing two selected lengths. For example, if you select **MSI Plessey Two Discrete Lengths**, then scan **0, 2, 1, 4**, the only MSI Plessey symbols decoded are those containing 2 or 14 characters. Numeric bar codes begin on page [5-122](#). If you make an error, or wish to change your selection, scan **CANCEL** on page 5-124.



MSI PLESSEY - TWO DISCRETE LENGTHS

Set Lengths for MSI Plessey (Continued)

Length Within Range - This option allows you to decode a code type within a specified range. For example to decode MSI Plessey symbols containing between 4 and 12 characters, first scan **MSI Plessey Length Within Range**. Then scan **0, 4, 1** and **2** (single digit numbers must always be preceded by a leading zero). Numeric bar codes begin on page [5-122](#). If you make an error, or wish to change your selection, scan **CANCEL** on page 5-124.



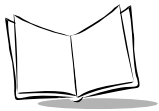
MSI PLESSEY - LENGTH WITHIN RANGE

Any Length - Scanning this option allows you to decode MSI Plessey symbols containing any number of characters.

Note: *Selecting this option may lead to mis-decodes for MSI Plessey codes.*



MSI PLESSEY - ANY LENGTH



MSI Plessey Check Digits

These check digits at the end of the bar code verify the integrity of the data. At least one check digit is always required. Check digits are not automatically transmitted with the data.



ONE MSI PLESSEY CHECK DIGIT



TWO MSI PLESSEY CHECK DIGITS

Transmit MSI Plessey Check Digit

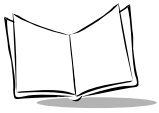
Scan the appropriate bar code below to transmit the data with or without the check digit.



**TRANSMIT MSI PLESSEY CHECK DIGIT
(ENABLE)**



**DO NOT TRANSMIT MSI PLESSEY CHECK DIGIT
(DISABLE)**



MSI Plessey Check Digit Algorithm

When the two MSI Plessey check digits option is selected, an additional verification is required to ensure integrity. Either of the two following algorithms may be selected.



MOD 10/MOD 11



MOD 10/MOD 10

Enable/Disable PDF417

Scan a bar code below to enable or disable PDF417 scanning.

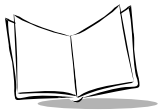
Note: *PDF417 parameters are available only on the 2D P460/P360.*



Enable PDF417



Disable PDF417



PDF417 Scanning Mode

This parameter allows you to select one of the following scanning mode options:

- ♦ Smart Raster
- ♦ Slab Only Raster
- Always Raster
- Programmable Raster

Select a scanning mode.



Smart Raster



Slab Only Raster



Always Raster



Programmable Raster

Programmable Raster Height And Raster Expansion Speed

This parameter allows you to select the laser pattern's height and rate of expansion, and is only used when Programmable Raster or Always Raster is enabled. This parameter is intended for very specific applications, and is usually not necessary.

Select the laser pattern's height and/or rate of expansion.

1. Scan the bar code for either **RASTER HEIGHT** or **RASTER EXPANSION SPEED** below.
2. To represent a two-digit value, scan two bar codes from *the next page*. Valid values are between 01 and 15.

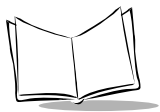
3. If you make an error, or wish to change your selection, scan **CANCEL**.



Raster Height (Default 15)



Raster Expansion Speed (Default 11)



Programmable Raster Height And Raster Expansion Speed (Continued)



0



1



2



3



4



5



6



7



8



9



Cancel

Aiming Mode

This parameter allows you to select either an aiming dot or slab raster for aiming.

Select the aiming mode.

Note: *Aiming modes can not be used with the Always Raster scanning option.*



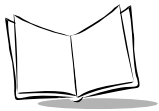
Slab Raster



**Aiming Dot
(Normal Timeout)**



**Aiming Dot
(Extended Timeout)**



Enable/Disable MicroPDF

Scan a bar code below to enable or disable MicroPDF417 scanning.



Enable MICROPDF417



Disable MICROPDF417

Code 128 Emulation

When this parameter is enabled, the scanner transmits data from certain MicroPDF417 symbols as if it was encoded in Code 128 symbols. Transmit AIM Symbology Identifiers must be enabled for this parameter to work.

If Code 128 Emulation is enabled, these MicroPDF417 symbols are transmitted with the one of the following prefixes:

JC1 if the first codeword is 903-907, 912, 914, 915

JC2 if the first codeword is 908 or 909

JC0 if the first codeword is 910 or 911

If disabled, they are transmitted with one of the following prefixes:

JL3 if the first codeword is 903-907, 912, 914, 915

JL4 if the first codeword is 908 or 909

JL5 if the first codeword is 910 or 911

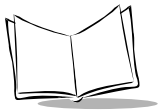
Scan a bar code below to enable or disable Code 128 Emulation.



Enable Code 128 Emulation



Disable Code 128 Emulation



UCC/EAN-128 Emulation

Certain MicroPDF417 symbols can be “linked” with a linear symbol during transmission to create a single composite code. In this case, the MicroPDF417 symbol provides supplemental data to the linear symbol. Three scanning options are offered for these symbols:

- ◆ If Decode Linked Symbol is selected, Code 128, ITF-14 and UPC/EAN symbols are not decoded unless a MicroPDF417 symbol beginning with codeword 906, 907, 912, 914, or 915 is present.
- ◆ If Ignore Linked Symbol is selected, MicroPDF417 symbols beginning with codeword 906, 907, 912, 914, or 915 are ignored.
- ◆ If Autodiscriminate Linked Symbol is selected, the scanner looks for a MicroPDF417 symbol when scanning a 1-D symbol. If a MicroPDF417 symbol is not detected within the timeout period, the 1-D symbol data is transmitted.

The Timeout Between Decodes, Different Symbols parameter must be set to 0 before Ignore Linked Symbol or Autodiscriminate Linked Symbol can be selected.

Select one option for UCC/EAN 128 Emulation by scanning the appropriate bar code.



Decode Linked Symbol



Ignore Linked Symbol



Autodiscriminate Linked Symbol

Macro PDF Features

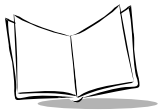
This section discusses programmable Macro PDF features fully supported by the scanner. Macro PDF is a special feature for concatenating multiple PDF symbols into one file.

Caution

When printing, keep each Macro PDF sequence separate, as each sequence has unique identifiers. Do not mix bar codes from several Macro PDF sequences, even if they encode the same data. When scanning Macro PDF sequences, scan the entire sequence without interruption. If you scan a mixed sequence, you get two long low beeps for inconsistent file ID or inconsistent symbology error.

Program the required generic decode and data transmission parameters using the bar codes on the following pages. Use the same programming method for setting Macro PDF features as used for standard features.

Note that all parameter settings are stored in non-volatile memory and so are retained after powerdown.



Macro PDF Transmit / Decode Mode Symbols

Select only one of the four options below for handling the decoding of Macro PDF. The scanner can handle up to 64K bytes of decoded data, including any optional field information, except in the modes *Transmit Any Symbol in Set/No Particular Order* and *Scan in Sequence Only/Transmit in Sequence Without Buffering* where there is no limit to the size of the Macro PDF set.

- ◆ **Buffer All Symbols / Transmit When Complete** - transmits entire Macro PDF sequence after all the symbols are scanned. This is the default option.

If the decode data exceeds the limit of 64 symbols or 64K bytes, there is no transmission because the entire sequence has not been scanned. Use the parameter Flush Macro PDF Buffer to purge the buffer.

- ◆ **Transmit Any Symbol in Set / No Particular Order** - causes transmission of data from up to 1024 Macro symbols as decoded, whether it is in sequential order or not.
- ◆ **Scan in Sequence Only / Transmit in Sequence Without Buffering** - causes transmission of data from up to 1024 symbols within the Macro PDF sequence as decoded, provided the Macro PDF symbols are scanned in order. If you do not scan the symbols in order, an error occurs.
- ◆ **Buffer Scans Out of Order / Transmit Scans in Order** - when enabled, decode data from each symbol within the Macro PDF sequence is transmitted when decoded, provided that the Macro PDF symbols are scanned in order. Decode data from symbols out of order in the Macro PDF sequence is buffered. The scanner can buffer up to 64 symbols or 64K bytes.

Macro PDF Transmit / Decode Mode Symbols (Continued)



**Buffer All Symbols /
Transmit When Complete**



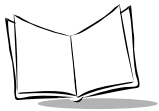
**Transmit Any Symbol In Set /
No Particular Order**



**Scan In Sequence Only /
Transmit In Sequence Without Buffering**



**Buffer Scans Out Of Order/
Transmit Scans In Order**



Transmit Symbols in Codeword Format

Enabling this activates transmission of each PDF symbol as directly decoded data codewords, whether that symbol is part of a macro PDF sequence or not. Note that data is output as codeword values — not as interpreted data.

“Codeword values” is an ASCII representation of a number from 000 to 928 for each codeword, preceded by an escape character. This escape character is a backslash by default, but the user may change this value. For example, the codeword value 005 is sent to the host in the form of \005 for GLIs, and \C005C for ECIs. This output format is based on the AIM USA Uniform Symbology Specification for PDF417 (1994).

All output codewords take up exactly 4 characters for GLIs and 6 characters for ECIs. However, there may be nondecodable characters in the PDF symbol, such as a GLI sequence. This special codeword sequence activates a certain kind of interpretation to the encoded data. Non-decodable codewords like GLIs are embedded in the output stream just like any other codeword, e.g., \927\001.

Because GLIs are indistinguishable from other codewords in the output data stream, the host must intelligently recognize them as GLIs and process their interpretations.

Note that when a macro PDF sequence is transmitted, the last character in the last block of data transmitted is always \922 (if selected). This indicates the end of that macro PDF transmission.



Enable Transmit In Codeword Format



Disable Transmit In Codeword Format

Transmit Unknown Codewords

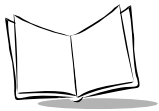
This enables using the output codeword format for transmitting any non-GLI or non-macro PDF codeword. If this is not enabled and an unknown codeword is found, a decode error beep sounds.



Transmit Unknown Codewords



Do Not Transmit Unknown Codewords



Escape Characters

This enables the backslash (\) character as an Escape character for systems that can process transmissions containing special data sequences. Scan a bar code below to either format special data (e.g., GLI escapes, MacroPDF417 Control Block optional fields) according to the GLI (Global Label Identifier) protocol or the ECI (Extended Channel Interpretation) protocol, or to disable this parameter.



ECI Protocol



GLI Protocol



None

Delete Character Set ECIs

This parameter enables the scanner to delete any escape sequences representing Character Set ECIs (also known as GLIs) from its buffer before transmission. In many receiving systems, Character Set ECIs can be removed without affecting the way data is displayed or processed.

When deletion is selected, the scanner transmits data from PDF417 and MicroPDF417 bar codes containing Character Set ECIs, even when the ECI Protocol is disabled.

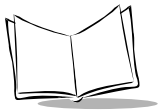
Scan a bar code to delete or transmit character set ECIs.



Delete Character Set ECIs



Transmit Character Set ECIs



ECI Decoder

This parameter enables the scanner to interpret any Extended Channel Interpretations (ECIs) that are supported by the scanner firmware. This parameter has no effect on symbols that were not encoded using ECIs. This version of the product supports ECIs 000900 through 000913, used for efficient encoding of Common Data Syntax Format 00-99. If this parameter is disabled, and a symbol is scanned that was encoded using an ECI escape, the scanner transmits the ECI escape followed by the uninterpreted data.

Scan a bar code to enable or disable this option.



Enable ECI Decoder



Disable ECI Decoder

Transmit Macro PDF User-Selected Fields

When enabled, the following parameters cause transmission of the specified field in subsequently scanned Macro PDF417 symbols. Unless transmission of a specific field is enabled, it is not transmitted. The options cannot be changed in the middle of a Macro PDF set entry. All user-selected fields are prefixed by \923 for GLIs, and \C923C for ECIs. Tags and examples in the following parameters demonstrate GLI protocol, but the ECI tag (\C923C) can be used instead if ECI protocol is enabled.

Transmit File Name

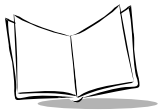
Transmit File Name activates transmission of the file name field. The field character tag is \923\000. For example, the filename MANHOURS.WK1 is sent as: \923\000MANHOURS.WK1.



Enable File Name Transmit



Disable File Name Transmit



Transmit Block Count

Transmit Block Count activates transmission of the block count field. The field character tag is \923\001. For example, the field may be: \923\0011856.



Enable Transmit Block Count



Disable Transmit Block Count

Transmit Time Stamp

Transmit Time Stamp activates transmission of the time stamp field. The field character tag is \923\002. For example, the field may be: \923\0022123443243234.



Enable Transmit Time Stamp



Disable Transmit Time Stamp

Transmit Sender

Transmit Sender activates transmission of the sender field. The field character tag is \923\003. For example, the field may be: \923\003SymbolTechnologiesHoltsville, NY.



Enable Sender Transmit



Disable Sender Transmit

Transmit Addressee

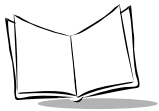
Transmit Addressee activates transmission of the addressee field. The field character tag is \923\004. For example, the field may be: \923\004AIM USA.



Enable Addressee Transmit



Disable Addressee Transmit



Transmit Checksum

Transmit Checksum activates transmission of the checksum field. The field character tag is \923\006. For example, the field may be: \923\00663823.



Enable Checksum Transmit



Disable Checksum Transmit

Transmit File Size

Transmit File Size activates transmission of the file size field. The field character tag is \923\005. For example, the field may be: \923\005179234.



Enable File Size Transmit



Disable File Size Transmit

Transmit Macro PDF Control Header

Transmit Macro PDF Control Header activates transmission of the control header, which contains the segment index and the file ID. For example, the field may be: \92800000\725\120\343. The five digits after the \928 are the segment index (or block index), and \725\120\343 is the file ID.



Enable Macro PDF Control Header Transmit



Disable Macro PDF Control Header Transmit

Last Blocker Marker

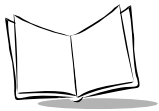
Enable / Disable Last Block Marker enables marking the last block in the set by the codeword \922.



Enable Last Block Marker



Disable Last Block Marker



Flush Macro Buffer

This flushes the buffer of all decoded Macro PDF data stored to that point, transmits it to the host device, and aborts from Macro PDF mode.



Flush Macro PDF Buffer

Abort Macro PDF Entry

This clears all currently-stored Macro PDF data in the buffer without transmission and aborts from Macro PDF mode.



Abort Macro PDF Entry

Security Options

Linear Code Type Security Levels

The Phaser offers four levels of decode security for linear code types (e.g., Code 39, Interleaved 2 of 5). Higher security levels are selected for decreasing levels of bar code quality. As security levels increase, the scanner's aggressiveness decreases.

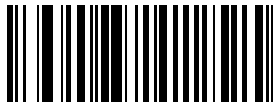
Select the security level appropriate for your bar code quality.

Note: *Does not apply to Code 128.*

Linear Security Level 1

The following code types must be successfully read twice before being decoded

Code Type	Length
Codabar	All
MSI Plessey	4 or less
D 2 of 5	8 or less
I 2 of 5	8 or less



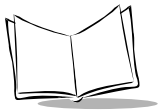
LINEAR SECURITY LEVEL 1

Linear Security Level 2

All code types must be successfully read twice before being decoded.



LINEAR SECURITY LEVEL 2



Linear Code Type Security Level (Continued)

Linear Security Level 3

Code types other than the following must be successfully read twice before being decoded.
The following codes must be read three times:

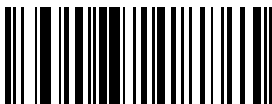
Code Type	Length
MSI Plessey	4 or less
D 2 of 5	8 or less
I 2 of 5	8 or less



LINEAR SECURITY LEVEL 3

Linear Security Level 4

All code types must be successfully read three times before being decoded.



LINEAR SECURITY LEVEL 4

Bi-directional Redundancy

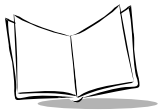
This parameter is only valid when a **Linear Code Type Security Level** (see page [5-101](#)) is enabled. When this parameter is enabled, a bar code must be successfully scanned in both directions (forward and reverse) before being decoded.



ENABLE BI-DIRECTIONAL REDUNDANCY



DISABLE BI-DIRECTIONAL REDUNDANCY

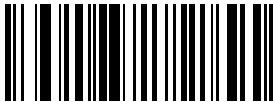


UPC/EAN Security Level

The Phaser offers four levels of decode security for UPC/EAN bar codes. Increasing levels of security are provided for decreasing levels of bar code quality. There is an inverse relationship between security and scanner aggressiveness, so be sure to choose only that level of security necessary for any given application.

UPC/EAN Security Level 0

This is the default setting which allows the scanner to operate in its most aggressive state, while providing sufficient security in decoding “in-spec” UPC/EAN bar codes.



UPC/EAN SECURITY LEVEL 0

UPC/EAN Security Level 1

As bar code quality levels diminish, certain characters become prone to mis-decodes before others (i.e., 1, 2, 7, 8). If you are experiencing mis-decodes of poorly printed bar codes, and the mis-decodes are limited to these characters, select this security level.

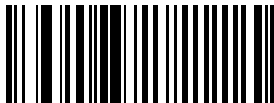


UPC/EAN SECURITY LEVEL 1

UPC/EAN Security Level (Continued)

UPC/EAN Security Level 2

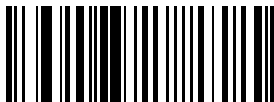
If you are experiencing mis-decodes of poorly printed bar codes, and the mis-decodes are not limited to characters 1, 2, 7, and 8, select this security level.



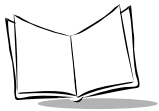
UPC/EAN SECURITY LEVEL 2

UPC/EAN Security Level 3

If you have tried Security Level 2, and are still experiencing misdecodes, select this security level. Be advised that selecting this option is an extreme measure against mis-decoding severely out of spec bar codes. Selection of this level of security significantly impairs the decoding ability of the scanner. If this level of security is necessary, you should try to improve the quality of your bar codes.



UPC/EAN SECURITY LEVEL 3



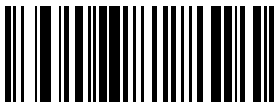
RS-232C Parameters

Baud Rate

Baud rate is the number of bits of data transmitted per second. The scanner's baud rate setting should match the data rate setting of the host device. If not, data may not reach the host device or may reach it in distorted form.



BAUD RATE 600

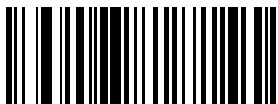


BAUD RATE 1200

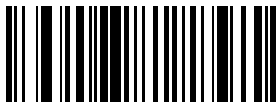


BAUD RATE 2400

Baud Rate (Continued)



BAUD RATE 4800



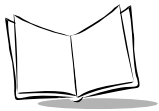
BAUD RATE 9600



BAUD RATE 19200



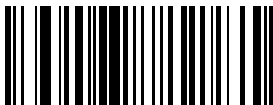
BAUD RATE 38400



Parity

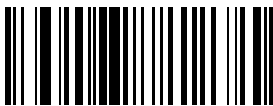
A parity check bit is the most significant bit of each ASCII coded character. Select the parity type according to host device requirements.

If you select **ODD** parity, the parity bit has a value 0 or 1, based on data, to ensure that an odd number of 1 bits are contained in the coded character.



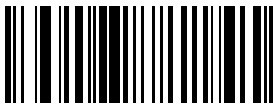
ODD

If you select **EVEN** parity, the parity bit has a value 0 or 1, based on data, to ensure that an even number of 1 bits are contained in the coded character.



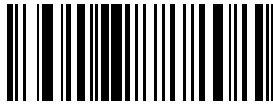
EVEN

Select **MARK** parity and the parity bit is always 1.



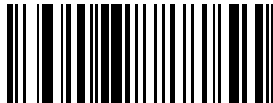
MARK

Select **SPACE** parity and the parity bit is always 0.



SPACE

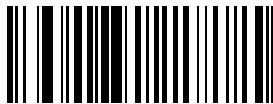
If no parity is required, select **NONE**.



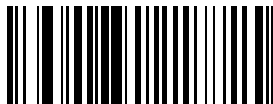
NONE

Check Receive Errors

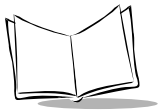
Select whether or not the parity, framing, and overrun of received characters are checked. The type of parity used is selectable through the **PARITY** parameter.



CHECK FOR RECEIVED ERRORS



DO NOT CHECK FOR RECEIVED ERRORS



Hardware Handshaking

The data interface consists of an RS-232C port. The port has been designed to operate either with or without the hardware handshaking lines, RTS, *Request to Send*, and CTS, *Clear to Send*.

If Standard RTS/CTS handshaking is selected, scan data is transmitted according to the following sequence:

- ◆ The scanner reads the CTS line for activity. If CTS is asserted, the scanner waits up to two seconds for the host to negate the CTS line. If, after two seconds (default), the CTS line is still asserted, the scanner sounds a transmit error and any scanned data is lost.
- ◆ When the CTS line is negated, the scanner asserts the RTS line and waits up to two seconds for the host to assert CTS. When the host asserts CTS, data is transmitted. If, after two seconds (default), the CTS line is not asserted, the scanner sounds a transmit error and discards the data.
- ◆ When data transmission is complete, the scanner negates RTS 10 msec after sending the last character.
- ◆ The host should respond by negating CTS. The scanner checks for a negated CTS upon the next transmission of data.

During the transmission of data, the CTS line should be asserted. If CTS is deasserted for more than 50 ms between characters, the transmission is aborted, the scanner sounds a transmission error, and the data is discarded.

If the above communications sequence fails, the scanner issues an error indication. In this case, the data is lost and must be rescanned.

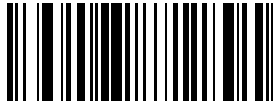
If Hardware Handshaking and Software Handshaking are both enabled, Hardware Handshaking will take precedence.

Note: *The DTR signal is jumpered active.*

Note: *When using RTS/CTS handshaking and a cradle, there is an 8 ms delay for the information to travel between the host and the scanner. If this setup is necessary, scan the Intercharacter Delay bar code on page 5-117 and set the delay for 10 ms or more.*

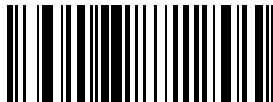
Hardware Handshaking (Continued)

Scan the bar code below if no Hardware Handshaking is desired.



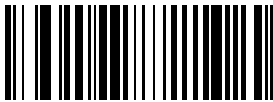
NONE

Scan the bar code below to select Standard RTS/CTS Hardware Handshaking.



STANDARD RTS/CTS

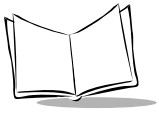
When RTS/CTS Option 1 is selected, the cradle asserts RTS before transmitting and ignores the state of CTS. The scanner deasserts RTS when the transmission is complete.



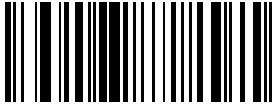
RTS/CTS OPTION 1

Hardware Handshaking (Continued)

When Option 2 is selected, RTS is always high or low (user-programmed logic level). However, the scanner waits for CTS to be asserted before transmitting data. If CTS is not

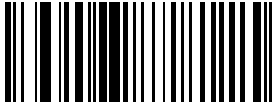


asserted within two seconds (default), the scanner issues an error indication and discards the data.



RTS/CTS OPTION 2

When Option 3 is selected, the scanner asserts RTS prior to any data transmission, regardless of the state of CTS. The scanner waits up to two seconds (default) for CTS to be asserted. If CTS is not asserted during this time, the scanner issues an error indication and discards the data. The scanner deasserts RTS when transmission is complete.



RTS/CTS OPTION 3

Software Handshaking

This parameter offers control of the data transmission process in addition to, or instead of, that offered by hardware handshaking. There are five options.

If Software Handshaking and Hardware Handshaking are both enabled, Hardware Handshaking takes precedence.

None

When this option is selected, data is transmitted immediately.



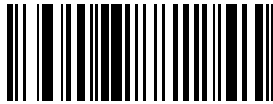
NONE

Software Handshaking (Continued)

ACK/NAK

When this option is selected, after transmitting data, the cradle expects either an ACK, *Acknowledge*, or NAK, *Negative Acknowledge*, response from the host. Whenever a NAK is received, the cradle transmits the same data again and waits for either an ACK or NAK. After three unsuccessful attempts to send data when NAKs are received, the cradle issues an error indication and discards the data.

The cradle waits up to the programmable Host Serial Response Time-out to receive an ACK or NAK. If the cradle does not get a response in this time, it issues an error indication and discards the data. There are no retries when a time-out occurs.



ACK/NAK

ENQ

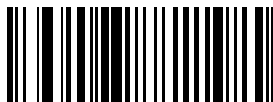
When this option is selected, the cradle waits for an ENQ, *Enquiry*, character from the host before transmitting data. If an ENQ is not received within two seconds, the cradle issues an error indication and discards the data. The host must transmit an ENQ character at least every two seconds to prevent transmission errors.



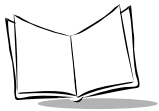
ENQ

ACK/NAK with ENQ

This combines the two previous options.



ACK/NAK with ENQ

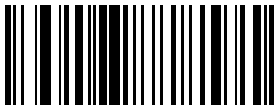


Software Handshaking (Continued)

XON/XOFF

An XOFF, *Transmit Off*, character turns the scanner transmission off until the scanner receives an XON, *Transmit On*, character. There are two situations for XON/XOFF:

- ♦ XOFF is received before the scanner has data to send. When the scanner has data to send, it then waits for an XON character before transmission. The scanner waits up to two seconds to receive the XON. If the XON is not received within this time, the scanner issues an error indication and discards the data.
- ♦ XOFF is received during a transmission. Data transmission then stops after sending the current byte. When the scanner receives an XON character, it sends the rest of the data message. The scanner waits indefinitely for the XON.



XON/XOFF

Host Serial Response Time-out

This parameter specifies how long the scanner waits for an ACK, NAK or CTS before determining that a transmission error has occurred. This only applies when in one of the ACK/NAK Software Handshaking modes, or RTS/CTS Hardware Handshaking option.

The delay period can range from 0.0 to 9.9 seconds in 0.1 second increments. After scanning the bar code below, scan two numeric bar codes beginning on page [5-122](#). If you make an error, or wish to change your selection, scan [CANCEL](#) on page 5-124.



HOST SERIAL RESPONSE TIME-OUT

RTS Line State

Note: *This only applies to the scanner in corded mode. It has no affect when uploading data through the cradle.*

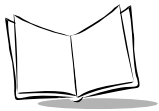
Scan the appropriate bar code below to set the idle state of the Serial Host RTS line. Choose LOW RTS line state or HIGH RTS line state.



HOST: LOW RTS

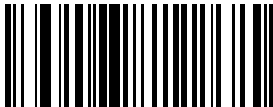


HOST: HIGH RTS



Stop Bit Select

The stop bit(s) at the end of each transmitted character marks the end of transmission of one character and prepares the receiving device for the next character in the serial data stream. The number of stop bits (one or two) selected depends on the number the receiving terminal is programmed to accommodate. Set the number of stop bits to match host device requirements.



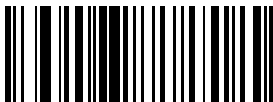
1 STOP BIT



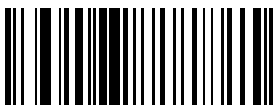
2 STOP BITS

ASCII Format

This parameter allows the cradle to interface with devices requiring a 7-bit or 8-bit ASCII protocol.



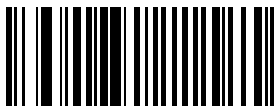
7-BIT



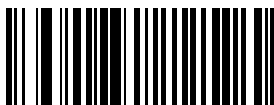
8-BIT

Beep on <BEL>

When this parameter is enabled, the scanner beeps when a <BEL> character is detected on the RS-232C serial line. <BEL> is issued to gain a user's attention to indicate an illegal entry or other important event.



**BEEP ON <BEL> CHARACTER
(ENABLE)**



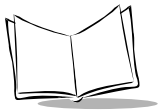
**DO NOT BEEP ON <BEL> CHARACTER
(DISABLE)**

Intercharacter Delay

Select the intercharacter delay option matching host requirements. The intercharacter delay gives the host system time to service its receiver and perform other tasks between characters. The delay period can range from no delay to 99 ms in 1 ms increments (if you are using a cradle and RTS/CTS handshaking, the delay period can range from 5 ms to 99 ms). After scanning the bar code below, scan two bar codes beginning on page [5-122](#) to set the desired time-out. If you make an error, or wish to change your selection, scan [CANCEL](#) on page 5-124.



INTERCHARACTER DELAY



MCL-Net Parameters

MCL-Net Baud Rate

Baud rate is the number of bits of data transmitted per second. Scan the appropriate bar code below to set the MCL-Net baud rate. The default baud rate is 38400.



BAUD RATE 600



BAUD RATE 1200



BAUD RATE 2400

MCL-Net Baud Rate (Continued)



BAUD RATE 4800



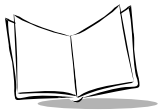
BAUD RATE 9600



BAUD RATE 19200



BAUD RATE 38400



MCL-Net Hex Addressing Mode

Scan the appropriate bar code below to set the MCL-Net Hex addressing mode. The default mode is *Disabled*.



MCL-NET HEX ADDRESSING DISABLED



MCL-NET HEX ADDRESSING ENABLED

Scanner Address

Scan the following barcode, followed by 3 digits from the numeric barcode section (starting on page [5-122](#)), to define the (decimal) address of the scanner in the range 001 to 254.



SCANNER ADDRESS

MCL-Net Transmit Retries

Scan the following barcode, followed by 2 digits from the numeric barcode section (starting on page [5-122](#)), to define the number of retries in the range 1 to 10.



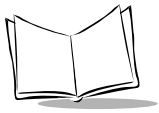
MCL-NET RETRIES

MCL-Net Frame Timeout

Scan the following barcode, followed by 2 digits from the numeric barcode section (starting on page [5-122](#)), to define the amount of time to wait for an ACK or NAK from the host before retransmitting. The timeout is in 100 ms increments in the range 100 ms to 3000 ms.

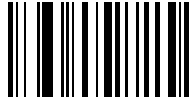


MCL-NET FRAME TIMEOUT

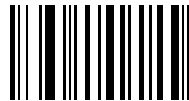


Numeric Bar Codes

For parameters requiring specific numeric values, scan the appropriately numbered bar code(s).



0



1



2



3



4

Numeric Bar Codes (Continued)



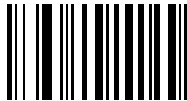
5



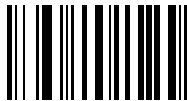
6



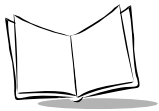
7



8



9



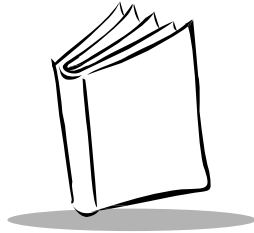
Numeric Bar Codes (Continued)

Cancel

If you make an error, or wish to change your selection, scan the bar code below.



CANCEL



Appendix A

Bar Code Information

UCC/EAN-128

UCC/EAN-128 is a convention for printing data fields with standard Code 128 bar code symbols. UCC/EAN-128 symbols are distinguished by a leading FNC 1 character as the first or second character in the symbol. Other FNC 1 characters are used to delineate fields.

When EAN-128 symbols are read, they are transmitted after special formatting strips off the leading FNC 1 character and replaces other FNC 1 characters with the ASCII 29 GS control character.

When AIM symbology identifiers are transmitted, the modifier character indicates the position of the leading FNC 1 character according to AIM guidelines. For example, **jc1** indicates a UCC/EAN-128 symbol with a leading FNC1 character.

Standard Code 128 bar codes which do not have a leading FNC 1 may still be used, but are not encoded according to the EAN-128 convention. Standard Code 128 and UCC/EAN-128 may be mixed in an application. The P460/P360 autodiscriminates between these symbols and can enable or disable one or both code types via bar code menus. The following table indicates the behavior of the P460/P360 in each of the four possible parameter settings.

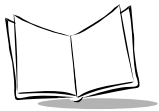


Table A-1. Reading Standard Code 128 & UCC/EAN 128

Standard Code 128	UCC/EAN-128	Effect and Example
Disable	Disable	No Code 128 symbols can be read.
Disable	Enable	<p>Read only symbols with leading FNC 1.</p> <p>Examples:</p> <p>FNC1 ABCD^{FNC1}E will be read as ABCD²⁹E</p> <p>A^{FNC1}BCD^{FNC1}E will be read as ABCD²⁹E</p> <p>FNC1FNC1 ABCD^{FNC1}E will be read as ABCD²⁹E</p> <p>ABCD^{FNC1}E can not be read</p> <p>ABCDE can not be read</p>
Enable	Disable	<p>Read only symbols without leading FNC 1.</p> <p>Examples:</p> <p>FNC1 ABCD^{FNC1}E can not be read</p> <p>A^{FNC1}BCD^{FNC1}E can not be read</p> <p>FNC1FNC1 ABCD^{FNC1}E can not be read</p> <p>ABCD^{FNC1}E will be read as ABCD²⁹E</p> <p>ABCDE will be read as ABCDE</p>
Enable	Enable	<p>Read both types of symbols.</p> <p>Examples:</p> <p>FNC1 ABCD^{FNC1}E will be read as ABCD²⁹E</p> <p>A^{FNC1}BCD^{FNC1}E will be read as ABCD²⁹E</p> <p>FNC1FNC1 ABCD^{FNC1}E will be read as ABCD²⁹E</p> <p>ABCD^{FNC1}E will be read as ABCD²⁹E</p> <p>ABCDE will be read as ABCDE</p>

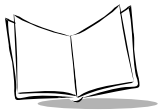
AIM Code Identifiers

Each AIM Code Identifier contains the three-character string **jcm** where:

- j** = Flag Character (ASCII 93)
- c** = Code Character (see Table A-2)
- m** = Modifier Character (see Table A-3)

Table A-2. Code Characters

Code Character	Code Type
A	Code 39
C	Code 128/EAN-128
E	UPC/EAN
F	Codabar
G	Code 93
H	Code 11
I	Interleaved 2 of 5
M	MSI Plessey
S	D2 of 5, IATA 2 of 5
X	Bookland EAN, Code 39 Trioptic, Coupon Code



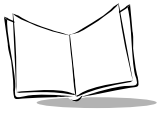
The modifier character is the sum of the applicable option values based on the following table.

Table A-3. Modifier Characters

Code Type	Option Value	Option
Code 39	0	No check character or Full ASCII processing.
	1	Reader has checked one check character.
	3	Reader has checked and stripped check character.
	4	Reader has performed Full ASCII character conversion.
	5	Reader has performed Full ASCII character conversion and checked one check character.
	7	Reader has performed Full ASCII character conversion and checked and stripped check character.
	Example: A Full ASCII bar code with check character W, A+I+MI+DW , is transmitted as J A7 AimId where 7 = (3+4).	
Trioptic Code 39	0	No option specified at this time. Always transmit 0.
	Example: A Trioptic bar code 412356 is transmitted as J X0 412356	
Code 128	0	Standard data packet, no Function code 1 in first symbol position.
	1	Function code 1 in first symbol character position.
	2	Function code 1 in second symbol character position.
	Example: A Code (EAN) 128 bar code with Function 1 character in the first position, FNC1 Aim Id is transmitted as J C1 AimId	
I 2 of 5	0	No check digit processing.
	1	Reader has validated check digit.
	3	Reader has validated and stripped check digit.
	Example: An I 2 of 5 bar code without check digit, 4123, is transmitted as J I0 4123	

Table A-3. Modifier Characters (Cont'd)

Code Type	Option Value	Option
Codabar	0	No check digit processing.
	1	Reader has checked check digit.
	3	Reader has stripped check digit before transmission.
	Example: A Codabar bar code without check digit, 4123, is transmitted as JF0 4123	
Code 93	0	No options specified at this time. Always transmit 0.
	Example: A Code 93 bar code 012345678905 is transmitted as JG00 12345678905	
MSI Plessey	0	Single check digit checked.
	1	Two check digits checked.
	2	Single check digit verified and stripped before transmission.
	3	Two check digits verified and stripped before transmission.
	Example: An MSI Plessey bar code 4123, with a single check digit checked, is transmitted as JM0 4123	
D 2 of 5	0	No options specified at this time. Always transmit 0.
	Example: A D 2 of 5 bar code 4123, is transmitted as JS0 4123	
UPC/EAN	0	Standard packet in full EAN country code format, which is 13 digits for UPC-A and UPC-E (not including supplemental data).
	1	Two-digit supplement data only.
	2	Five-digit supplement data only.
	4	EAN-8 data packet.
	Example: A UPC-A bar code 012345678905 is transmitted as JE000 12345678905	
Bookland EAN	0	No options specified at this time. Always transmit 0.
	Example: A Bookland EAN bar code 123456789X is transmitted as JX0 123456789X	



According to AIM standards, a UPC with supplemental bar code is transmitted in one of the following formats:

JE0 (UPC chars) (terminator) **JE2** (supplemental) (terminator) or

JE2 (supplemental) (terminator) **JE0** (UPC chars) (terminator)

In the Phaser, however, the format is changed to:

JE0 (UPC chars) **JE2** (supplemental)

Therefore, a UPC with two supplemental characters, 01234567890510, is transmitted to the host as a 21-character string, **JE00012345678905JE110**.

Table A-4. ASCII Character Set

ASCII Value	Full ASCII Code 39 Encode Char.	Keystroke	ASCII Value	Full ASCII Code 39 Encode Char	Keystroke
1000	%U	CTRL 2	1024	\$X	CTRL X
1001	\$A	CTRL A	1025	\$Y	CTRL Y
1002	\$B	CTRL B	1026	\$Z	CTRL Z
1003	\$C	CTRL C	1027	%A	CTRL [
1004	\$D	CTRL D	1028	%B	CTRL \
1005	\$E	CTRL E	1029	%C	CTRL]
1006	\$F	CTRL F	1030	%D	CTRL 6
1007	\$G	CTRL G	1031	%E	CTRL -
1008	\$H	CTRL H	1032	Space	Space
1009	\$I	CTRL I	1033	/A	!
1010	\$J	CTRL J	1034	/B	'
1011	\$K	CTRL K	1035	/C	#
1012	\$L	CTRL L	1036	/D	\$
1013	\$M	CTRL M	1037	/E	%
1014	\$N	CTRL N	1038	/F	&
1015	\$O	CTRL O	1039	/G	'
1016	\$P	CTRL P	1040	/H	(
1017	\$Q	CTRL Q	1041	/I)
1018	\$R	CTRL R	1042	/J	*
1019	\$S	CTRL S	1043	/K	+
1020	\$T	CTRL T	1044	/L	,
1021	\$U	CTRL U	1045	-	-
1022	\$V	CTRL V	1046	.	.
1023	\$W	CTRL W	1047	/	/

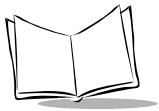


Table A-4. ASCII Character Set (Cont'd)

ASCII Value	Full ASCII Code 39 Encode Char.	Keystroke	ASCII Value	Full ASCII Code 39 Encode Char	Keystroke
1048	0	0	1073	I	I
1049	1	1	1074	J	J
1050	2	2	1075	K	K
1051	3	3	1076	L	L
1052	4	4	1077	M	M
1053	5	5	1078	N	N
1054	6	6	1079	O	O
1055	7	7	1080	P	P
1056	8	8	1081	Q	Q
1057	9	9	1082	R	R
1058	/Z	:	1083	S	S
1059	%F	;	1084	T	T
1060	%G	<	1085	U	U
1061	%H	=	1086	V	V
1062	%I	>	1087	W	W
1063	%J	?	1088	X	X
1064	%V	@	1089	Y	Y
1065	A	A	1090	Z	Z
1066	B	B	1091	%K	[
1067	C	C	1092	%L	\
1068	D	D	1093	%M]
1069	E	E	1094	%N	^
1070	F	F	1095	%O	_
1071	G	G	1096	%W	'
1072	H	H	1097	+A	a

Table A-4. ASCII Character Set (Cont'd)

ASCII Value	Full ASCII Code 39 Encode Char.	Keystroke	ASCII Value	Full ASCII Code 39 Encode Char	Keystroke
1098	+B	b	1113	+Q	q
1099	+C	c	1114	+R	r
1100	+D	d	1115	+S	s
1101	+E	e	1116	+T	t
1102	+F	f	1117	+U	u
1103	+G	g	1118	+V	v
1104	+H	h	1119	+W	w
1105	+I	i	1120	+X	x
1106	+J	j	1121	+Y	y
1107	+K	k	1122	+Z	z
1108	+L	l	1123	%P	{
1109	+M	m	1124	%Q	
1110	+N	n	1125	%R	}
1111	+O	o	1126	%S	~
1112	+P	p	1127		Undefined

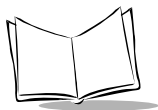


Table A-4. ASCII Character Set (Cont'd)

ALT Keys	Keystroke	ALT Keys	Keystroke	ALT Keys	Keystroke
2064	ALT 2	2075	ALT K	2086	ALT V
2065	ALT A	2076	ALT L	2087	ALT W
2066	ALT B	2077	ALT M	2088	ALT X
2067	ALT C	2078	ALT N	2089	ALT Y
2068	ALT D	2079	ALT O	2090	ALT Z
2069	ALT E	2080	ALT P	2091	ALT [
2070	ALT F	2081	ALT Q	2092	ALT \
2071	ALT G	2082	ALT R	2093	ALT]
2072	ALT H	2083	ALT S	2094	ALT 6
2073	ALT I	2084	ALT T	2095	ALT -
2074	ALT J	2085	ALT U		
Misc. Key	Keystroke	Misc. Key	Keystroke	Misc. Key	Keystroke
3001	PA 1	3009	CMD 7	3017	°
3002	PA 2	3010	CMD 8	3018	1/2
3003	CMD 1	3011	CMD 9	3019	¶
3004	CMD 2	3012	CMD 10	3020	§
3005	CMD 3	3013	¥	3021	
3006	CMD 4	3014	£	3022	0/00
3007	CMD 5	3015	¤		
3008	CMD 6	3016	¬		

Table A-4. ASCII Character Set (Cont'd)

PF Keys	Keystroke	PF Keys	Keystroke	PF Keys	Keystroke
4001	PF 1	4009	PF 9	4017	PF 17
4002	PF 2	4010	PF 10	4018	PF 18
4003	PF 3	4011	PF 11	4019	PF 19
4004	PF 4	4012	PF 12	4020	PF 20
4005	PF 5	4013	PF 13	4021	PF 21
4006	PF 6	4014	PF 14	4022	PF 22
4007	PF 7	4015	PF 15	4023	PF 23
4008	PF 8	4016	PF 16	4024	PF 24
F Keys	Keystroke	F Keys	Keystroke	F Keys	Keystroke
5001	F 1	5014	F 14	5027	F 27
5002	F 2	5015	F 15	5028	F 28
5003	F 3	5016	F 16	5029	F 29
5004	F 4	5017	F 17	5030	F 30
5005	F 5	5018	F 18	5031	F 31
5006	F 6	5019	F 19	5032	F 32
5007	F 7	5020	F 20	5033	F 33
5008	F 8	5021	F 21	5034	F 34
5009	F 9	5022	F 22	5035	F 35
5010	F 10	5023	F 23	5036	F 36
5011	F 11	5024	F 24	5037	F 37
5012	F 12	5025	F 25	5038	F 38
5013	F 13	5026	F 26	5039	F 39

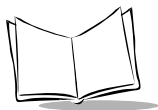
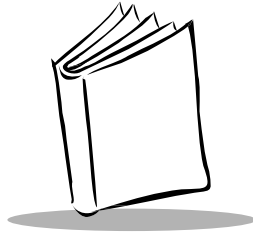


Table A-4. ASCII Character Set (Cont'd)

Numeric Keypad	Keystroke	Numeric Keypad	Keystroke	Numeric Keypad	Keystroke
6042	*	6049	1	6056	8
6043	+	6050	2	6057	9
6044	Undefined	6051	3	6058	Enter
6045	-	6062	4	6059	Num Lock
6046	.	6063	5	6060	00
6047	/	6064	6		
6048	0	6065	7		
Extended Keypad	Keystroke	Extended Keypad	Keystroke	Extended Keypad	Keystroke
7001	Break	7008	Backspace	7015	Up Arrow
7002	Delete	7009	Tab	7016	Dn Arrow
7003	Pg Up	7010	Print Screen	7017	Left Arrow
7004	End	7011	Insert	7018	Right Arrow
7005	Pg Dn	7012	Home	7019	Back Tab
7006	Pause	7013	Enter		
7007	Scroll Lock	7014	Escape		



Appendix B

Messages and Error Codes

Introduction

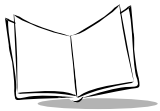
This chapter contains information on messages displayed on the scanner.

Messages

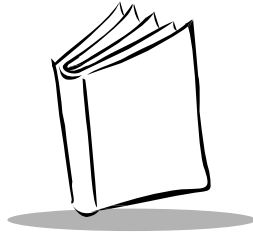
The scanner displays messages when certain actions are performed. If the scanner displays a message that is unfamiliar, contact the [Symbol Support Center](#) on page xi.

Table B-1. Scanner Messages

Message	Description
Unit Cradled	Scanner is properly inserted in the cradle
Battery Temperature Out Of Range	Battery temperature is out of range. Contact a Symbol Support Center on page xi.
Upload Failed. Retry	<ul style="list-style-type: none">After putting the scanner in the mode to transmit batch data to the host, it was not placed in the cradle or attached to a cable within the required 30 seconds.Communication failure with host due to host or cabling problems. Use the beeper indications to track the message. See <i>Beeper Indications</i> on page 48.



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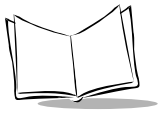
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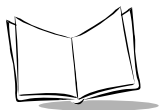
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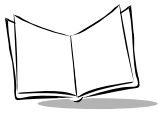
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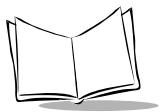
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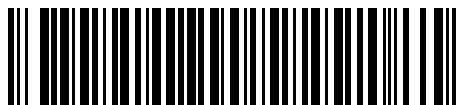
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